THE UNIVERSITY
OF ILLINOIS
LIBRARY

NOT TO BE
TAKEN FROM THE
ARCHITECTURE
BUILDING

UNIVERSITY OF ILLINOIS
LIBRARY

Class 720.6 Book RI Volume 19-20

Je 07-10M

The person charging this material is responsible for its return to the library from which it was withdrawn on or before the **Latest Date** stamped below.

Theft, mutilation, and underlining of books are reasons for disciplinary action and may result in dismissal from the University.

UNIVERSITY OF ILLINOIS LIBRARY AT URBANA-CHAMPAIGN

BUILDING USE ONLY

MAR 26 1977

MAR 26 1977

NOV 12 1982

L161—O-1096

Digitized by the Internet Archive
in 2015

https://archive.org/details/transactions1920roya

PAPERS

READ AT

The Royal Institute of British Architects,

SESSION 1868-69.

USUI CIVIUM, DECORI URBIUM.

LONDON:
PUBLISHED AT THE ROOMS OF THE INSTITUTE, 9, CONDUIT STREET, HANOVER SQUARE, W.

1869.

F

[ENTERED AT STATIONERS' HALL.]

The right of Reproduction and Translation is reserved by the Council.

LONDON:
J. DAVY AND SONS, PRINTERS, 137, LONG ACRE.

TABLE OF CONTENTS.

TITLE.	AUTHOR.	DATE.	PAGE.
Opening Address	By W. Tite, M.P., President.	Nov. 2nd, 1868	1 — 14
Discussion on Mr. C. Barry's Paper "Memoranda on the Works executed in Terra Cotta at New Alleyn's College, Dulwich."	.....	Nov. 16th, ,,	15 — 30
On Mosaic Decoration	By Austen Henry Layard, M.P., D.C.L., Honorary Fellow.	Nov. 23rd, ,,	31 — 58
Notes on the Celtic, Roman, Moorish, and other Remains in Algeria.	By Professor T. Hayter Lewis, Fellow.	Dec. 14th, ,,	59 — 72
A Communication dated "On the Archipelago, *en route* from Athens to Trieste."	By Prof. Donaldson, P.P., Hon. Sec. For. Cor.	Jan. 4th, 1869	73 — 77
A Descriptive Sketch of the New House at Humewood, Co. Wicklow.	By Wm. White, F.S.A., Fellow.	Jan. 4th, ,,	78 — 88
On a Development of the Theory of the Architecturesque.	By Professor Kerr, Fellow .	Jan. 18th, ,,	89 — 104
On the Science of Colour	By W. Benson, Esq. . .	Feb. 15th, ,,	105 — 121
Memoir of Joseph Bonomi, Architect, A.R.A.	By Wyatt Papworth, Fellow.	Mar. 1st, ,,	123 — 134
Something about Masons' Marks in various Countries.	By George Godwin, F.R.S., F.S.A., &c.	Mar. 1st, ,,	135 — 144
A Communication dated "Rome" . .	By Prof. Donaldson, P.P., Hon. Sec. For. Cor.	Mar. 15th, ,,	145 — 147
On the Criticism of Architecture . . .	By E. Ingress Bell, Associate.	Mar. 15th ,,	148 — 160

103359

TITLE.	AUTHOR.	DATE.	PAGE.
Memoir of the late Arthur Ashpitel, F.S.A.	By Wyatt Papworth, Fellow.	Apr. 19th, 1869	164 — 182
Outlines of Metronomy; or the Science of Proportion.	By W. Cave Thomas . .	May 24th, ,,	183 — 207
Stamboul and the Bosphorus	By Rev. R. Burgess, B.D., Hon. Member.	June 7th, ,,	209 — 221
On the Tomb of Ti. C. Vitalis, in the Villa Volkonski, Rome.	By Prof. Donaldson, P.P., Hon. Sec. For. Cor.	June 21st, ,,	223 — 227
Description of some Ruined Buildings in Palestine.	By the same.	June 21st, ,,	228 — 232
On Abyssinian Church Architecture . .	By Wm. Simpson, F.R.G.S.	June 21st, ,,	234 — 246

SESSIONAL PAPERS

OF THE

ROYAL INSTITUTE OF BRITISH ARCHITECTS,

Incorporated in the Seventh Year of William IV.

PATRONESS . . HER MOST GRACIOUS MAJESTY THE QUEEN.
PATRON . . . HIS ROYAL HIGHNESS THE PRINCE OF WALES.

COUNCIL.

President—WILLIAM TITE, M.P., F.R.S., F.S.A.

Vice-Presidents.

CHARLES BARRY. JOSEPH CLARKE, F.S.A. SIR CHARLES LANYON, M.P.

Honorary Secretaries.

Foreign Correspondence—T. L. DONALDSON, Past President. *Home Duties*—JOHN P. SEDDON.

Ordinary Members of Council.

E. CHRISTIAN.
F. P. COCKERELL.
J. EDMESTON.
J. FERGUSSON.
C. F. HAYWARD.
E. B. LAMB.
F. MARRABLE.
C. C. NELSON.
J. PEACOCK.
J. L. PEARSON.
T. ROGER SMITH.
A. WATERHOUSE.
DAVID BRYCE.
M. E. HADFIELD.
R. M. PHIPSON.

Auditors—EDWARD ROBERTS, Fellow, and JOHN J. THOMSON, Associate.

Treasurer & Banker—SIR W. R. FARQUHAR, BART., 16, St. James's Street.

Honorary Solicitor—F. OUVRY, 12, Queen Anne Street, Cavendish Square.

Assistant Secretary—CHARLES LOCK EASTLAKE, 9, Conduit Street, Hanover Square.

Librarian—S. W. KERSHAW, 9, Conduit Street, Hanover Square.

LONDON:

PUBLISHED AT THE ROOMS OF THE INSTITUTE, 9, CONDUIT STREET, HANOVER SQUARE, W.

1868.

[ENTERED AT STATIONERS' HALL.]

The Right of Reproduction and Translation is reserved by the Council.

LONDON:
J. DAVY AND SONS, PRINTERS, 137, LONG ACRE.

OPENING ADDRESS BY THE PRESIDENT,

WILLIAM TITE, ESQ., M.P., F.R.S., &c.

At the Ordinary General Meeting of the Royal Institute of British Architects, November 2nd, 1868.

GENTLEMEN,—It now becomes my duty to address you, and permit me to say that I do so with very great difficulty, because, from pressure of a political and personal nature, I have been unable to devote the necessary time to the preparation of a written address, and to have that address printed, as has been the custom on these occasions. Although my kind friends at Bath have saved me the trouble of a personal canvass, yet still, you know, any individual representing, as I do, a population of nearly 60,000 people, with five thousand voters, there remains much labour, and you may conceive that such an undertaking is not without occupation, though the absence of all anxiety relieves it from much of its difficulty.

My excellent friend, opposite me, (Mr. Beresford Hope), produced his address in a shape necessarily more acceptable than mine, but still I trust this apology will be sufficient to justify me in believing that you will accept what I have to say, although I depart from the usual course of reading an essay.

In the first instance, then, gentlemen, as regards the Institute itself, all are topics of congratulation. The success of the Institute is manifest and increasing. The total number of our friends, in May of this year, was 623. Of Fellows—the more important element—in 1858, ten years ago, we mustered only 146, and at the present time, 1868, we number 262. I think that is an increase which must be satisfactory to every one, because it shows that the main element of success in our profession and position of life, is increasing; and I apprehend there are very few architects in London who have not joined this Institute, and endeavoured to further its objects. With regard to finances, when I give you those numbers, you may conceive that they are equally satisfactory. We have been doing something with regard to our Library and its Catalogue, and I think we have done much which will be very useful hereafter in the latter important particular. One of the last paragraphs, also, in the Report of the Council, dated May 4th, is to the following effect:—

> "The Council are glad to be able to repeat that the new arrangements with regard to the appointment of paid officers, made during the previous session, has worked as satisfactorily as it was then anticipated, and that the Honorary Secretaries, relieved thereby from the more onerous duties of their office, have been enabled to give their attention to many matters connected with the general interests of the Institute, which had previously, of necessity, been in abeyance."

In this I entirely concur, for though in early days, our friend Mr. Fowler, and other honorary secretaries and officers, worked very hard, the business of the Institute has increased so much that it was impossible for any man engaged in the ordinary pursuits of his profession to find time to give that attention to our work which its importance demanded, without having paid assistance. That has worked well, and I recognize with great pleasure, therefore, the testimony on that subject which I have read out of the Report of the Council.

During the past session, the papers read have not been very many, but they have been of great interest. One of them, of great importance, was read by Professor Ansted, on "The Relations of Geology with Architecture." The discussions which followed the reading of that paper showed how important a bearing the one science has upon the other. A paper of great interest followed, prepared by Mr. Digby Wyatt, whose absence this evening I, for one, deeply regret. I have received a letter from him, in which he informs me that he has left for Paris, on a mission for the

government, connected with art matters. His paper was one of great value, and led to a good discussion, which improved our acquaintance with much that might be said to be novel in architecture. The last paper to which I shall refer was that by Mr. Charles Barry, which was one of much importance in connection with structural Architecture, because it showed how, in a large building, with which I am connected as a governor—Dulwich College—he had successfully introduced the use of terra cotta instead of the more costly material, stone. He stated the comparative cost of one and the other, the nature of the material itself, and the incidents which led to its use on this occasion; and, on the whole, it was a paper of great value. I would say, however, having had some experience in this subject, I would caution those around me with reference to the use of this material. I am told, but I may be wrong, that the ante-fixæ of the great Ionic church of St. Pancras, which are composed of terra cotta, have failed; and I need only point to the well-known statue of the Prince of Wales, afterwards George IV., at Brighton, which was also composed of that material, and, before it was removed, presented the pitiable spectacle of a statue having one arm dropped off, and also a leg. To the young architects present, I would say, "You must be extremely careful that the material is well and homogeneously prepared and burnt," and I would caution my young friends not to be too ready to adopt that with which they have not an entire acquaintance. My friend, Mr. Barry, knowing his material well, has adopted it on a large scale, and, I believe, to the entire satisfaction of the Governors of Dulwich College.

I have next to refer to a promise made by my friend the member for Cambridge, that he would bring before the House of Commons a question of the greatest importance, and which is put in the following words:—

> "Mr. Beresford Hope, M.P., Ex-President, gave notice that at the request of the Committee for the Conservation of Ancient Monuments and Remains, he intended to call the attention of the House of Commons to the condition of buildings possessing historical or archæological interest, and make a motion on the subject."

I trust that my hon. friend will be again elected a member of Parliament, and that he will then have an opportunity afforded him of redeeming the pledge thus given.

[Mr. Beresford Hope said he was absolved from it by Professor Donaldson, in the last session.]

I have, since I commenced my remarks, referred only to subjects of unmixed satisfaction; but I think, gentlemen, it now becomes my duty to advert to one which I feel, with the greatest possible respect to the persons most concerned, to be a subject of considerable difficulty; but I am advised that I am called upon to notice it from this chair. The incident itself is of great importance in its general bearing on the position of architects. It seems now to have become the universal fashion for us to be exposed, in all directions, to competition. Now, personally speaking, I have no reason to quarrel with competition. I have been as unsuccessful as most men in the profession in that direction, and occasionally successful; but it is of great importance that competitions should be decided on the fairest principles,—because any supposed or presumed unfairness has a distinct bearing on our position as architects and gentlemen. These remarks have reference to the incidents in connection with the two great competitions which have been recently settled. The one was the National Gallery, and the other the great edifice for the purposes of the Law Courts. I have been desirous to give the details and dates of every step that has been taken in connection with these matters, for I think, at all events, we should like to have them fairly and accurately recorded. The incidents are not many, but they are very remarkable and very peculiar.

The first of the two invitations to compete, viz., for the National Gallery, was issued on the 15th February, 1866, to Messrs. E. M. Barry, Banks and Barry, C. Brodrick, D. Wyatt, G. E. Street and G. G. Scott, and afterwards to Messrs. G. Somers Clarke, O. Jones, F. C. Penrose, F. P. Cockerell, and J. Murray; Mr. Scott ultimately withdrew, leaving ten competitors.

Designs sent in by ten competitors on 1st January, 1867.

Judges of Designs appointed in January, 1867, viz.: Viscount Hardinge, Lord Elcho, A. J. B. Beresford Hope, Esq., W. Boxall, Esq., D. Brandon, Esq., R. Redgrave, Esq., W. Russell, Esq., T. Gambier Parry, Esq., and W. Tite, Esq.

Letter by competing architects to Lord J. Manners, First Commissioner of Her Majesty's Works, &c., pointing out that it would be a breach of faith with them, if one of them were not selected for employment, 16th February, 1867. Judges reported 28th February, 1867, that they were "not prepared to recommend any one individual design for adoption," but that the design of Mr. E. M. Barry, "for a New Gallery," "and that of Mr. Murray for the adaptation of the present building, exhibited the greatest amount of architectural merit."

In this way this important competition terminated, or rather rested; and for a considerable period of time nothing more was done in it. Perhaps the matter was embarrassing enough to the Government, for it was not recommended by the judges that any design should be adopted, but they declared Mr. Barry's to be the best. The general feeling evidently was that it was desirable to pull down the present building and erect a new one.

The next great competition was with reference to the New Law Courts. Here the arrangements were very different, and the complications that ensued were very great. Those arrangements were of the nature and in the order, following:—

February, 1866.—Five Judges appointed. By Treasury: Mr. Cowper (Chairman), Mr. Gladstone, Sir W. Stirling Maxwell. By the Commission: Sir A. Cockburn, Sir R. Palmer.

December 23, 1865.—Treasury minute that the Committee of Judges shall issue the invitations to compete, and their award shall be final.

February, 1866.—Determination to limit the number of competitors to six, and letter of invitation (enclosing printed instructions which contained no promise to employ the successful architect) to Mr. Barry to be one of the six.

Negotiations: in the course of which the Treasury undertook to employ the successful architect; but introduced a condition forbidding him to take new works for three years after his appointment.

March 21, 1866.—Withdrawal of Mr. Scott and Mr. Barry from the competition, in consequence of this condition.

April 20, 1866.—Condition withdrawn; the number of competitors increased to twelve. Mr. Scott and Mr. Barry re-invited by letter, containing printed conditions, finally revised and signed by Lord Cranworth.

January 15, 1867.—Designs sent in by eleven competitors, one having resigned.

June 8, 1867.—Messrs. Shaw and Pownall appointed Judges of Designs, at the unanimous request of the competitors, increasing the number of Judges to seven.

July 30, 1867.—First award of the seven judges to the effect that they considered Mr. Barry's design the best for plan and distribution of interior, and Mr. Street's the best as an architectural composition. Recommendation, therefore, that those two gentlemen should be jointly employed in the respective departments named. Return of award by the Judges to the Treasury, with a request that the Judges would select one architect.

November 28, 1867.—Re-consideration of award by the Judges, and statement of them, that having come to the conclusion that the design of Mr. Barry is the best in regard to plan, and the design of Mr. Street in regard to elevation, and having recommended the joint employment of those two architects, they could do no more.

Reference of case to Attorney General.

Opinion of Attorney General that the award was invalid, and the Government free to make any appointment they thought proper.

May 30, 1868.—Followed by the appointment of Mr. Street.

June 8, 1868.—Letter of protest to Treasury by Mr. Barry, followed by others; but it must be noted that Mr. Barry was appointed Architect to the New National Gallery about the same time, viz., the middle of June, 1868.

Now, our friend, the President, who preceded me, pointed out some of the complications likely to result from the strange conditions of the New Law Courts; for in his address, in the year preceding my nomination, he makes this remark:—

> "I was just observing that there were certain complications attaching to the competition for the New Law Courts. These were of an administrative character, and owed their origin to the fact that the Government had handed over no inconsiderable portion of the control which, in the case of most public buildings, would have been shared between the Treasury and the Board of Works, to a Special Commission, created by Act of Parliament, and comprising a large infusion of the legal element. These gentlemen set to work with a very sound principle strongly before them, and, as was not unnatural, rode that principle a little hard. They assumed that the successful architect (or architects) ought to have made himself practically acquainted with the working of the different Courts of Law, and the inference which they drew from this undeniable proposition was, that it was needful for them to be excessively restrictive in the number of competitors chosen, in order to prevent the business of the Courts from being interrupted by the frequent visits of curious investigators, and so they draw the line at six. This was probably, in the eyes of all men, except the Commissioners themselves, an extravagant application of their principle. Not to allude to any other objection, this restriction manifested considerable confusion as to the artistic obligation, contracted with the national honour, to produce the best obtainable building. However, it required a vote of the House of Commons to overcome the reluctance of this most respectable Junta."

What my honourable friend then predicted followed exactly: at the same time, the result was not, on the whole, an unsatisfactory one. The calling in of two professional judges—men of the greatest eminence and practical skill—was, no doubt, exactly the course to remedy the difficulty which Mr. Hope pointed out; and the appointment of Messrs. Pownall and Shaw was satisfactory to all. The result was equally satisfactory. It said that the plan of Mr. Barry, and the elevation of Mr. Street were the best. Of course, these two gentlemen putting their heads together to erect these buildings must have been satisfactory to the nation, and to the profession generally. There was good precedent for this, because, in my early days, Mr. Wilkins and Mr. Gandy built one of the great club houses as joint architects; and in another case, in which I was concerned, Mr. Cockerell and myself agreed jointly to build one of the great Banks in the City,—the London and Westminster—and in both cases everything appeared to go on agreeably and conveniently, and with a satisfactory result. However, in the affair of the New Law Courts discussions went on, and it ended, as I have just stated, in Mr. Barry being entrusted with the re-building of the National Gallery, and Mr. Street with the erection of the New Law Courts—a result which does not appear to have pleased anybody very much, and which appeared only extremely difficult to reconcile, because each gentleman had great claims; and the solution which I ventured at the time humbly to suggest to the House of Commons, appeared to me the only reasonable one. A debate occurred in that House in July on the motion of Mr. Julian Goldsmid. The suggestion I then ventured to make was this: that, inasmuch as it was perfectly well known that the Law Courts, as designed, required far more space than could be accorded in the

Lincoln's-Inn Fields site, I proposed that the Chancery and Common Law Courts should be divided and one erected on the Thames Embankment, and the other placed in Lincoln's-Inn, and that the one should be given to Mr. Street, and the other to Mr. Barry. That suggestion was opposed in the House, though it was received with some favour by the Public, and so the matter ended in the very unsatisfactory condition in which we find it.* I am unwilling to pursue this discussion further, except to say that I think the profession generally feels in all these competitions if a strict adherence is not paid to the conditions put forth, it is hardly to be expected that men of character and ability will join in such competitions. The result to the public may, however, end satisfactorily in the present instance, because no one respects more than I do—more, perhaps, than we all do—both these gentlemen: either one would be sure to erect a building creditable to the nation and to our profession; but, to say the least of it, if there is disappointment, and a sense of injustice on the one hand, and inconvenience on the other, damage, I fear, must follow to our honourable profession; and I regret that some more satisfactory result has not, therefore, been obtained. It is unwillingly that I have taken up this question. I have no right to give an opinion of what ought now to be done. I have no intention of giving any beyond the limits within which I have circumscribed myself. I would rather, in concluding an unpleasant subject, which, as I have already said, nothing but a sense of duty has led me to discuss, read the statement of a public writer in the *Builder*, than give any opinion of my own.

The President then read the leading article from the *Builder*, of 13th of June, 1868,—which in the main insisted upon Mr. Barry's claim to the preference, upon the ground that the award of the professional judges was in favour of his plan, which in the instructions furnished to competitors was stated to be the principal object to be kept in view.

Having now performed this unpleasant duty—I hope not unkindly (for I have only urged that where rules are laid down for competition they should be strictly observed)—I have now a subject of a more agreeable nature to refer to, and that is to congratulate ourselves in having obtained a very valuable friend and supporter of this Institute in the person of my honourable friend Mr. Layard, who is now present, and to whom I had the honour of presenting the Royal Gold Medal of the Institute for this year. He will be, doubtless, of great assistance to us, and I understand he has proposed to give us, at some suitable time during the session, a paper on the Art Decorations of Venice, which will deal generally with the ornamentation, particularly in mosaic, of that glorious city.

The general considerations of the position of architecture induces me to believe that we are becoming better recognized as a body of scientific men, and on this subject I cannot help referring to an address of mine, delivered in 1852, in which I said, that in the House of Commons we were not particularly well received. I think that at the present time, even there, we are held in much greater estimation, and are felt to be men who know something of our profession, and something of the arts which ornament and lead to it. The passage in my address is as follows:—

> "I cannot but express my hope that the profession I am attached to, and which I have followed for more than forty years, may receive from me in a kindly spirit a few words of caution—that we ought not to forget that the great principles of art demand something more than a mere patient re-production of forms eliminated in and appropriate to other times, without sufficient reference to the great power given to us by new materials, demanding different treatment, and a new exertion of the imaginative faculty."

---

* Since this paper was put in type, it is stated in an official document that the property already purchased for the site has cost £785,000; and that it is proposed to obtain authority from Parliament for the purchase of additional property, estimated to cost a further sum of £668,000.

The caution I then ventured to give, I think also applies with great force to the incidents of the present day. It is wrong to confine our studies and our practice to one style of architecture alone. We ought to begin at the beginning. It is of little use to seek to be a Gothic architect alone, so on the other hand it is of little value to be exclusively a classic architect. Try to understand both styles, and do not be led away by the fashion of the day. The difficulty with us now is that everything must be mediæval! It is very well when judiciously applied, but far from agreeable or fitting when not so applied. My friend Mr. Hope may dispute this opinion with me, because he has offered a premium for a design for a Gothic theatre, when I think that most will agree with me that Italian or French architecture is better adapted to that class of buildings. I have, perhaps, myself done as much as most men in the Gothic style, and I believe I was the first man who attempted to make a Gothic railway station, because it suited what I may call the *genius loci*. Whether I succeeded or not, you will be able to say when you visit Carlisle. It was troublesome, and did not go very well with the platforms, and sheds and roofs, but I had no difficulty with the refreshment rooms and halls. I built other stations, as at Rouen and Havre, in other styles, and I perhaps may think I was more happy there; but I may congratulate my friend, Mr. Scott, on the enormous development of that style of architecture which he is about to carry out at the St. Pancras station of the Midland Railway. In what has been done one sees the joint work of the architect and the engineer, and that enormous shed which alone would cover much that I have built for railway purposes. One cannot sufficiently admire the great skill which is displayed in the construction of that roof, as well as the propriety of the decorations. I am sure from the specimen already executed, that we shall see there a building in every way worthy of our profession, and the time to which we belong.

I am now brought to another subject on which it is always painful to dwell,—that is the necrology of the Institute. I was not personally acquainted with all of those who have been mentioned in the annual report as deceased, but there is one gentleman whom I knew very well, Mr. Burnell, concerning whom I will quote a brief obituary notice, which appeared at the time of his death in the *Building News*, and in every word of which I can cordially join.

> "On the 23rd of July last, Mr. G. R. Burnell, died at his residence in Kensington Gardens Terrace, in the fifty-fourth year of his age. He was a well-known writer of several scientific works. His attainments were numerous. He had extensive knowledge of languages, and had resided in America, France, and Belgium, besides visiting Spain and Sardinia. About seven years of his life were spent in France, during which time he was engaged on the Paris and Rouen Railway, and as superintending architect of the Havre Docks. On the cry being raised of '*La France pour les Français*,' in 1848, he returned to England. Though he executed several works both here and abroad, his bent was decidedly literary. He contributed several articles to the *Building News* early in his career, especially on roofs. In 1857 he wrote a rudimentary work on 'Limes and Cements,' in 1861, 'The Annual Retrospect of Engineering and Architecture.' He edited 'The Builders' and Contractors' Price-book,' and 'The Engineers' and Architects' Pocket-book.' He was connected, too, with the *Journal of Gaslighting* for many years, and wrote several papers for the Society of Arts, and for the Institution of Civil Engineers, for which he received prizes."

Other deaths since our last meeting have been recorded, upon none of which can I give you any particular information. The Hon. Secretary has this evening announced the decease of Mr. T. Allason, Fellow, who I did not know, for he belonged to a comparatively late period; but I knew his father an eminent and popular architect, who had travelled much, and who left us a very valuable work on the Roman Remains at Pola, in Istria; and in other ways contributed to the advancement of our profession.

I find on referring to Mr. Beresford Hope's address, in the year preceding my now second nomi-

nation, that he alludes to the Thames Embankment—I will follow suit. I think it is a work worthy of ancient Rome—a work of which Englishmen may justly be proud. That work has been carried out so far in a comparatively small space of time; and whether we regard the beauty of the material used, the excellence of the workmanship, or the usefulness of the work itself—(for that after all has a great deal to do with it)—the Thames Embankment is marked out as one of the greatest features of the age. Both south and north are equally admirable. I can only conceive that when one shall be able, perhaps within another twelvemonth, to begin with that great work at Westminster and, by means of New Cannon Street, to find one's-self within a few minutes' walk of the Royal Exchange, it will mark an era, an epoch, in the history of architectural skill and national development. On the other side of the Palace of Westminster, it will be continued on up to Battersea, for which powers have recently been obtained. Probably some efforts will be made to continue it on the other side, and soon we shall see that the Thames, so long the great disfigurement of the metropolis, will become one of its greatest ornaments. While speaking of the Thames Embankment, I venture to say how gratified I am at the progress of the New St. Thomas's Hospital, opposite the House of Commons, now being erected by my excellent friend Mr. Currie. It is founded on the principle of the *Lariboisiére* and other great French Hospitals. I hope soon to see other edifices carried out on a similar plan and arrangement. It will, when complete, accommodate 600 sick and wounded persons, and I believe, as a piece of architecture, will be just as creditable as it is as a work of humanity.

During the interval which has elapsed since my honourable friend addressed you from this chair, a great deal has been done in the way of architecture in the City. The great hotels are magnificent pieces of ornamentation, as well as being admirably adapted to the purposes for which they were built. When I speak of those at Charing Cross, and in the City, and at the Victoria Station, I speak of buildings which are elegant in themselves, and based upon the best architectural principles. I recollect the Bishop of Oxford speaking, one day in the Egyptian Hall of the Mansion House, on the subject of the efforts being made for the redecoration of St. Paul's. He said he had been looking at Evelyn, who remarked in one of his works that he had passed through London, and thought it "the ugliest city for its bigness he had seen in Europe." I hope we are now redeeming that great blot on our national education, and our national means, and that soon we shall have a London worthy of the great nation of which it is the capital. I don't think I can say quite as much for the new bridges. I confess I do not much like the bridges which span the Thames in all directions; and on this subject I will quote a short note which is printed in my address in 1862:

> "Blackfriars Bridge, I may also notice, will soon cease to exist. As is well known, it was the work of one of our best architects, the elder Mylne, and it was celebrated, not only in this country, but in Europe, as of surpassing elegance and beauty. In the competition which has raged for some months past as to the designs for its successor, I cannot say I see much to admire in the result, for, unfortunately, the very worst design of the whole has been chosen. Mr. Page's three-arched bridge was a grand idea, though defective in detail. The bridge about to be erected is in five segmental arches of iron, with stone piers, and the architectural features of those piers and other adornments are highly objectionable."

I think the result bears out the remark I then made. I fear, as Evelyn said of London, that it will be the ugliest bridge for its bigness that you will see on the face of Europe. I am sorry, because it supplies the place of a bridge which was admired in Italy and France. However, it is a bridge which will carry us safely over, and will increase the convenience and comfort of the Londoners; and we must be content to sacrifice a little good taste for these admirable results. I feel that I have occupied your time too long, and I fear, in a very unsatisfactory way. I am sorry I have not been able to speak

better, as my voice, for once in my life, fails me. I am greatly obliged to you for listening to me with so much patience, and infinitely more obliged to you for allowing me to appear here in the situation I have now the honour to fill.

Mr. Beresford Hope, M.P. (past President), rose and said :—Allow me, Sir, to invite you to perform a feat which some people may think impossible; namely, to separate yourself into two persons, and, as President of this Institute, to put to the vote a resolution, which I beg to propose, of thanks to our honoured and eloquent friend, who has just given us that interesting address. Of course, I rise on this occasion, as having myself sat in that curule chair, which you now so worthily occupy, and I congratulate you on this auspicious inauguration of your fourth consulate—our President,

"Consulque non unius anni."

You occupy that chair by the suffrages of our affection and veneration. You occupy it alike for your services by voice and by pencil, by being the veteran patron and supporter of this Royal Institute, and by the great munificence with which you have connected your name with it, in ways most useful for those who will come after. Of course, Sir, in proposing a vote of thanks for your address, I do not commit myself to all which you have said, while fully admitting your just claim to advance your own opinions, as you have done this evening, *sans peur et sans reproche*. You have thrown down the gauntlet so bravely that none will take it up, except in a diffident manner. The matters which sounded most pugnacious in your address were the comments you have passed on the late great competitions. In these affairs both you and I were much mixed up. We were joint judges of the competition for the National Gallery, and we sat looking at each other as friendly opponents across the floor of the House of Commons in the debates upon the Law Courts. You have spoken your full mind on this subject; I mean to speak no mind of mine. If you ask me why, I answer—because we are not fairly matched together. You, Sir, occupy that chair most worthily: you have a perfect right to speak with all authority in this Institute; in your hands rests the casting vote. The mover of this resolution, by what I must call the eccentric constitution of this Institute has only a voice, but not a vote on it, and if any one here were so insane as to get up and move a negative to the resolution which I am proposing, I should have to sit with folded hands, unable to vote in favour of my own resolution. I say this is an eccentric constitution. As long as I might have been supposed to be a candidate for the Presidentship I said nothing upon the matter. It would have been bad taste to have done so. While I was President it would have been worse taste, for the duties of office ought always to be a check upon any man's too fervid reforming instincts. But now that I have passed the chair, and that I may be supposed to enjoy immunity from hope or fear for the future, I feel that it is my duty to speak plainly. You will bear with me, then, for saying that the constitution which admits amateurs into the Institute, but subjects them to such restrictions as those I have pointed out, is unworthy of this great body. No doubt the regulation to which I refer was framed more than thirty years ago, and the intervening time has been as 300 years, if tested by the growth of the human mind. You created your class of honorary fellows, who might not serve on council, nor vote upon the most ordinary matters until, and unless, one of them was voted into the chair, and then, for the time being, he was your prime minister. After that the hour struck, and he relapsed into his former impotence. You also have honorary members who cannot even be presidents; £25 makes the one order, merit the other. The *rationale* of the scheme of a donation of £25. making an honorary fellow, while artistic and literary eminence only makes an honorary member, would, to the cynical bystander, seem to amount to this,—that, in the opinion of the Institute, £25. is of more value than eminence. I say that is a ridiculous constitution. I say so with all good will, because there is no ambition on my own part in connection with it:

but having been once your prime minister, with right of vote and right of casting vote, at this moment I am not able even to vote for my own proposition, and I therefore decline to enter into this controversy. I appear here, for the moment, as an outsider, and as such I aver that we have done great things. You have told us how the Institute has increased, and have expressed your desire that the architectural profession should be honoured in the world as it deserves to be; but if it is to be so, I call upon our Fellows to throw away all fear and dread of our non-professional brethren, and to meet them with both hands, as they have met us with theirs. That being so, I beg leave to decline following our worthy President, either with praise or comment, on what he has said on the question of these two competitions. On the general question of competition, I would venture briefly to put it in a shape in which it has not been presented before. If you have not competition, how is the young man to make his professional skill or his genius known? Architecture, as is well known, is a matter which deals with pounds, shillings, and pence; it deals also with a great deal of time. The smallest building, the very least thing in the world that an architect can be called in for, is a matter of three figures. How, then, with the comparatively small amount of chances represented by the brevity of human life—how is a young man engaged in architecture to make himself known? Take the case of lawyers! For our sins there may be four or five lawsuits in a day. The medical practitioner, again, may have his forty or fifty patients, and a day's work in a hospital may stamp him a Harvey or a Brodie. But with regard to architecture, from the physical circumstances of the case, the opportunity for the man of genius to get himself forward is very small indeed; I am not arguing for competition. I only say this,—let those who decry competition give us some other method of bringing young men forward which shall check jobbing, which shall check nepotism, and which shall also check the blighting influences of old prejudices and jealousies. You have referred, Sir, to the motion which I promised to bring before the House last session. At that time I represented a manufacturing constituency, in the Midland counties. Circumstances induced me to accept the first office I ever held under the Crown, that of Steward of the Manor of Northstead, and before I entered Parliament again, there came the death agonies of the old English Parliament. We were walking, as it were, with our shrouds tied about our necks. A variety of grave matters, the compound-householder, the Irish church, and so on, were in full debate, and I felt that if I had brought this matter forward, to which my honourable friend has referred, I might have made a speech—imperfectly reported, perhaps, in *The Times*, and well reported in *The Builder*—but I should have done no good to you. But I did not want to make simply a speech. I thought I had better reserve the matter for our new rulers, and see whether they were up to the summit of their position or not. On that account I did not bring it forward in the last session. I consulted Professor Donaldson, and he gave me a plenary absolution; I felt then that I was excused, but I have not lost sight of the question, and hope to have an opportunity, ere long, to bring it forward, and when I do so, I shall bring it forward as a branch of a much larger question, on which I hold a decided opinion, namely, the necessity of our having a Minister of Art, Architecture and Science,—a minister that shall absorb all the functions of First Commissioner of Works, and all the South Kensington functions of the Lord President, so as to build up an efficient and responsible department of the public service. I do not advocate a permanent minister of this kind, for this reason, that however good a man might be at 48, 58, or 68 years of age, when he gets to be 88 or 98 he might be a little behind the running, but unless he does something egregiously absurd or corrupt, there would be some difficulty in displacing him. I am for a good, efficient, first-rate minister, with the eyes of Parliament and the country upon him, with a permanent secretary to give stability to the machinery, and a removable under-secretary, who would be the responsible official in the House, to which his chief does not belong.

There is only one other matter, and that is to repudiate all idea of quarrelling with you, Sir, about a Gothic theatre. That ghost is not laid, for you will see it flitting about in the prize list of the

Institute for the current year. You say you have never seen a Gothic theatre! That is because it has never been tried. There was a time when we could say we had not seen a Gothic bank, or railway station, before you built the one at Carlisle. My own idea of a Gothic theatre is the apse of a Gothic cathedral—the rounded end of a building with a succession of galleries. There is one point on which we shall, I am sure, all agree; that is, as to the necessity for the architect, who aims at success, studying and understanding all styles. Perhaps my reason for saying that is not the same as yours. I admire Greek architecture as much as any one; but I believe it is imperfect architecture, because those who developed it did not understand the arch. If they had done so, they might have become very good Goths after all. I beg pardon for having occupied you so long; but our President has invited us to discuss so many points, that I hope you will excuse some prolixity, and I will conclude by expressing our hearty congratulations at seeing you, Sir, sitting here in better health, and by proposing our cordial thanks for the address which you have delivered to us this evening.

Mr. G. GILBERT SCOTT, Fellow, said, I have been asked by my friend, Mr. Barry, who was to have seconded this motion, to take that task upon myself. After the very full speech in proposing the vote of thanks which Mr. Beresford Hope has made, very little more remains for me to add; but I do say, that I think every one must have heard with great pleasure the address of our respected President. I hardly know anything in it but what I more or less agree with, excepting that I have no strong feeling on the subject of the competitions referred to. I am satisfied, on my own part, with the result. I am not speaking relatively or argumentatively, but being myself a party to one competition, I believe I speak the feeling of the profession generally, in stating that the result, as to the hands into which that work has fallen, apart from all questions as to the logical grounds of the decision, is satisfactory to them. It is not my intention to follow up the subjects to which the President has alluded, because on almost every one I agree with him,—perhaps not to the full meaning that the President may have had in his mind, but, generally, I differ but very little from anything he has said. I did not quite understand, in speaking of a work I was connected with—the Midland Station at St. Pancras—whether he gave to me the credit for that roof. It was not my work, but the work of the engineer, though I am responsible for its decoration. I will only only add the expression of the great pleasure which all of us feel in meeting the President here in full force, as I hope, and with all the zeal he shows for the success of the Institute and the profession. He has been over and over again thanked for his munificence towards the Institute, but I beg personally to return him my thanks for the immense benefit he has done to the Institute, in promoting to such a liberal extent, the funds in aid of the library.

Mr. GEORGE GODWIN, Fellow: I will beg leave to add a few words for two reasons,—one is, that I may express, with the gentleman who preceded me, my gratitude to Mr. Tite, not simply for what he is always doing for this Institute, but for the exertions he is ever ready to make for the profession generally. His energy is something remarkable, only equalled, it seems, by his liberality. We have had noble instances of it ourselves, and in other societies with which he is concerned it has been equally shown. Only the other day, with reference to the Camden Society, Mr. Tite, having been elected President, and being possessed of a valuable and scarce work, had it printed under competent editorship, and presented a copy of it to every member of that Society. The second reason for my rising is to take advantage of the opportunity which the President's observations on competitions afforded me, of calling attention to some large competitions which are now going on, and which are managed in a very remarkable manner. I allude to the Metropolitan Asylums for the Sick and Imbecile Poor, which are springing up to the astonishment, in many cases, of ratepayers, though not to myself and others, who took part in the measures which led to the Act of Parliament under which they are about to be built. The system on which architects are selected to compete for these buildings seems to be altogether unintelligible People are asking on what grounds the gentlemen who compete are selected. I would not say a word against those named: but there is this

peculiarity, that in more than one or two parishes, for which asylums are to be built, well-known architects of reputation, who have paid rates and taxes for years, have been passed over, and young men are brought into these competitions, whose chief recommendation is, that they are untrammelled by anything like preconceived notions, having never done anything of the sort before, and who make their first appearance as competitors for the credit of erecting these asylums. Doubtless many will distinguish themselves therein, but I think men who have won their spurs should not be passed over altogether. Therefore I think it would be well if it come to the ears of the Metropolitan and District Boards that architects are asking the question, by what system these arrangements are regulated, and appointments made. Are the competitors friends of individual members of the Boards? Are they recommended by the body of ratepayers? Or, in what way are the selections made? Enormous sums are about to be spent with either good or bad results, and the question seems to me an important one. With these few observations, I content myself with emphasising most heartily the vote of thanks that has been proposed to the President.

Mr. CHARLES BARRY, Fellow.—Mr. Beresford Hope rather delays asking a vote upon this resolution, in order that others may add their voice in respect to what he has said in reference to the President. On the professional subjects touched upon nothing further remains to be said, but there was one remark which fell from Mr. Hope that I am sure finds response in the minds and consideration of many present—that is, the personal affection we feel towards the President for his kindly aid and sympathy in our difficulties as young men, and which I myself have experienced over and over again whenever I have applied to him for advice. I am sure, from my knowledge of gentlemen in this room, very many will entirely sympathize with my feelings in this respect. Mr. Godwin referred just now to a subject which I will just touch upon, because it is one of the gravest interest, viz., the terms of competition under which architects have been lately invited to compete for certain public institutions to which he has alluded. These consist of large Infirmaries for the imbecile poor within the Metropolitan area; Hospitals for fever and small-pox cases; Unions of parishes for the erection of workhouse infirmaries and pauper schools; and they should obviously afford large opportunities for the display of architectural skill; but it may be within the knowledge of some gentlemen here, as it is within my own, that the terms of the competitions offered in respect of these buildings are so different from the spirit of those to which members of this Institute are accustomed, that I am not surprised to find that Mr. Godwin does not recognize the names of its members amongst the competitors. I may, however, state that this subject, being one of vital interest to our profession, has already attracted the attention of your Council, and some kind of movement will in all probability be taken by them upon it during the present session.

Mr. A. H. LAYARD, M.P., Honorary Member, said:—Although only an honorary member of the Institute, I may ask your indulgence while I address to you a very few words. I think we are now in a very important architectural period, and I particularly wish to call the attention of the Institute to what is about to take place in this great metropolis. The Government, whatever ministry may be in office, is about to undertake the erection of the most important public buildings ever erected in our time in any capital of the world, not even excepting Paris, because though great changes have been made in the streets and thoroughfares of that city, no great number of national public buildings have been added to it. We are now going to erect New Courts of Law, a new National Gallery, the larger portion of the public offices, including the Admiralty, War Office, and Colonial Office, and probably a vast building at South Kensington for the collections of natural history, which must be divided from the art collections and library of the British Museum. We are thus going to commence the erection of some of the greatest and most important architectural monuments in this kingdom, during the lifetime, I hope, of most present. It appears to me, then, of the utmost importance, not only to the reputation of the country at large, but of the profession, the members of which I have the honour to address, that we

should not fall into any gross blunders, either as to the style or as to the site of these great edifices. I do not offer any opinion of my own as to what the style should be, whether gothic or classic; all that I would venture to say is, let us, if possible, give up quarrelling over terms and build in what is really an English style of architecture suitable to the time and country in which we live, and consistent with the habits and requirements of the nation. But what I urge is this; let the Institute keep its eyes upon the Government, whether it is composed of the friends of the honourable gentleman on my left (Mr. Beresford Hope) or of my own friends. It is really a question of national credit and reputation that we should not commit ourselves, and do something egregiously wrong with regard to the public buildings which we are about to erect. We have the Thames Embankment, affording a magnificent site, and the means of erecting a series of buildings which may rival those of any other country in size and splendour. I do not say whether that is the best site or not; I only desire to urge the necessity of our earnestly considering the question. I see Mr. Street present. He has now the duty of erecting the Law Courts. No one will doubt that that great work has been placed in thoroughly competent hands; and it will be for him to point out to the Government that which he considers the most appropriate site. But still it appears to me that it is one of the legitimate functions of this Institute, as a great public body, to take such questions as these into consideration, and to see whether they cannot aid in directing, both the Government and public opinion upon it. I urge this upon you, because no time is to be lost; for the necessity of providing these great public buildings is so great, that I have no doubt when the next Parliament meets, this question will be one of the earliest that will have to be decided. In the meantime, this Institute might confer essential benefit by endeavouring to help public opinion in a direction which may lead to satisfactory results to the country. The two points to be considered are these:—first of all, with regard to the sites of these buildings; and, secondly, the style in which they shall be built. I believe Mr. Street is wholly unfettered with regard to the latter. I understand that his elevation and designs were neither accepted nor rejected by the Government, and that he is left free to rectify or alter them, as he may think proper. Mr. E. Barry has been appointed the architect of the New National Gallery. As regards the new public offices not forming part of the building containing the Foreign and India Offices, there is no decision, whether as regards their site, their style, or the architect to whom they are to be confided. I much regret that the House of Commons has decided not to remove the National Gallery from its present site; but against that decision there is no appeal. The decision as to the sites of the Public Offices and the Law Courts has still to be taken; and if, in the opinion of those most capable of judging, their erection upon the Thames Embankment should conduce most to the public convenience, and should add most to the ornament of the metropolis, the Institute might, I am convinced, be of essential use in influencing and directing public opinion on this important subject. In fact, the Institute might perform an important public function, by exercising a certain control over the architecture of the metropolis, and in saving us from the discredit which, in the past, has attached to so many of our public buildings. I entirely agree with all that has been said with regard to our worthy President. I now have the honour of sitting on the same side of the House of Commons as he has done for some years. I know what the value of his opinion is there. I wish we had more of the profession in Parliament; and I trust other members of this Institute will find their way into that august assembly. I am aware of the generous support Mr. Tite has given. The next best thing to having money, is to be able to make good use of it. I congratulate my estimable friend on both. His wealth is devoted to the most honourable and praiseworthy purposes; and, when a man thus employs his wealth, its possession excites no jealousy on the part of others.

Mr. BERESFORD HOPE then put the motion, which was carried by acclamation.

The PRESIDENT rose and said,—I am much obliged to my excellent friend the mover, and also to

my good friend, Mr. Scott, the seconder, for the motion itself, and to all of you, gentlemen, for the kind way in which you have received it. Self (as Lord Chesterfield said), is a subject on which all men can be voluble, but few entertaining, and therefore I shall say no more on that subject. With regard to the competitions adverted to by my friend Mr. Godwin, it would seem that they only tend to encourage such architects as are willing to accept less than the usual remuneration for their services,—a novel principle in competitions which I can scarcely imagine members of this Institute will approve. We are bound by the rules of our forefathers with regard to the commission paid to architects, and I trust no one will think of countenancing competition as to who will do the work cheapest. It is natural that those who have to raise the rates should wish to economize them as much as possible, and some day perhaps we may hear of them asking people to do the work for nothing. There were two matters which I forgot to mention in my opening remarks. While on the subject of Gothic architecture, I omitted to congratulate you on what has recently been effected at the City Guildhall. The works there have been executed in such excellent spirit, and with such marked success, as to call forth our highest admiration. The roof is beyond all praise, though I am afraid the glazing will make the hall too dark for any purpose not mediæval, but it is remarkable for its architectural propriety and good taste. The new market is an elegant and appropriate building, and both the hall and the market reflect great credit on the City Architect, Mr. Horace Jones. I am happy to say that the Royal Academy will, as I am informed by the President, be ready to receive the pictures at the next April exhibition. Mr. Smirke has so far proceeded with the work as fully to warrant that expectation, and the large additional wall space that will be obtained, will be an enormous advantage to the artists who exhibit their work. My friend, Mr. Beresford Hope, has exerted himself to preserve the colonnade and the peristyle of the entrance of the old building. It will be taken down and re-erected elsewhere as a monument of architectural and antiquarian curiosity. I thank you, gentlemen, for the kind reception you have given me, and for all you have been good enough to say of me.

Mr. J. H. Parker, Hon. Member, wished to take the opportunity of calling the attention of the meeting, and in particular those who had occasion to visit Italy, to the proceedings of the British Archæological Society in Rome. By the permission of the Pontifical Government, he said they had made researches which had never been made before in the history of Rome. They had been able to discern the ancient walls of the city, and also the sites of the several gates. He was happy to announce that sixty-four photographs had been taken of the historical buildings, beginning with the foundation of Rome, and coming down to the thirteenth century; the accurate representation of which could not have been obtained without the help of photography. He thought it was the duty of this Institute to encourage historical photography, inasmuch as they could judge of the age of a wall by the number of bricks per foot in it, and that could be ascertained by photography only. It was a work of the utmost importance in the study of architecture.

The meeting then adjourned.

SESSIONAL PAPERS

OF THE

ROYAL INSTITUTE OF BRITISH ARCHITECTS,

Incorporated in the Seventh Year of William IV.

PATRONESS . . HER MOST GRACIOUS MAJESTY THE QUEEN.
PATRON . . . HIS ROYAL HIGHNESS THE PRINCE OF WALES.

COUNCIL.

President—WILLIAM TITE, M.P., F.R.S., F.S.A.

Vice-Presidents.

CHARLES BARRY. JOSEPH CLARKE, F.S.A. SIR CHARLES LANYON, M.P.

Honorary Secretaries.

Foreign Correspondence—T. L. DONALDSON, Past President. *Home Duties*—JOHN P. SEDDON.

Ordinary Members of Council.

E. CHRISTIAN.
F. P. COCKERELL.
J. EDMESTON.
J. FERGUSSON.
C. F. HAYWARD.
E. B. LAMB.
F. MARRABLE.
C. C. NELSON.
J. PEACOCK.
J. L. PEARSON.
T. ROGER SMITH.
A. WATERHOUSE.
DAVID BRYCE.
M. E. HADFIELD.
R. M. PHIPSON.

Auditors—EDWARD ROBERTS, Fellow, and JOHN J. THOMSON, Associate.

Treasurer & Banker—SIR W. R. FARQUHAR, BART., 16, St. James's Street.

Honorary Solicitor—F. OUVRY, 12, Queen Anne Street, Cavendish Square.

Assistant Secretary—CHARLES LOCK EASTLAKE, 9, Conduit Street, Hanover Square.

Librarian—S. W. KERSHAW, 9, Conduit Street, Hanover Square.

LONDON:

PUBLISHED AT THE ROOMS OF THE INSTITUTE, 9, CONDUIT STREET, HANOVER SQUARE, W.

1868.

[ENTERED AT STATIONERS' HALL.]

The right of Reproduction and Translation is reserved by the Council.

LONDON:
J. DAVY AND SONS, PRINTERS, 137, LONG ACRE.

Royal Institute of British Architects.

At the Ordinary General Meeting, held on Monday, 16th November, 1868, JOSEPH CLARKE, V.P., in the Chair, the following Discussion (adjourned from the 22nd June last) took place:—

DISCUSSION ON MR. C. BARRY'S PAPER.—"MEMORANDA ON THE WORKS EXECUTED IN TERRA COTTA AT NEW ALLEYN'S COLLEGE, DULWICH."

Mr. C. BARRY, at the invitation of the Chairman, opened the Discussion as follows:—

A very few remarks additional to those contained in the Paper, read by me at the end of last Session, on terra-cotta as a building material, will serve to introduce the Discussion on the subject proposed for this evening.

And, *first*, with reference to the composition of the "body" of the material. It is commonly assumed that terra-cotta is nothing more than baked clay, or baked clay and sand; and in fact a large proportion of the terra-cotta made use of in buildings recently erected, and now in progress, is of no other character. Such ware does not, in my opinion, fairly deserve to be styled terra-cotta; and I do not consider it to be a worthy material for architectural purposes; certainly it is very different, and I think very inferior, to the ware which has been used at Dulwich. A little examination of the best ancient terra-cottas will convince practised observers of earthenware bodies that the best Greek and Roman works contained other elements than clay and sand. Terra-cotta, to endure the severities of change in these northern latitudes, should be a hard vitrious body of a peculiar character. To compound such a body for cream-coloured ware, we must use Cornish, Devon or Dorset clays, with ground flint, Cornish granite sand and old potsherds composed of like materials. If the colour is required to be of a warm stone hue, clay or marl from the Oolite beds in coal measures are used to brighten the mixture; also sands containing protoxide of iron. For brown or chocolate bodies, red clay is combined with manganese, with Dorset clay, flint, &c.

Glazes are prepared from "frits," composed of Cornish granite, flint, red lead, soda and borax. To these frits, after grinding, is added white or red lead, flint, glass, and Cornish granite.

The proportions in which these materials are used is the secret of the manufacturer, and the quality of the ware will differ according to his scientific knowledge; but as some of these materials are expensive, there is some pecuniary inducement to omit them, and a terra-cotta may be manufactured which is nearly equal, when new, in appearance to the best "body," but which is liable after a few years to disintegrate or flake on the surface.

Again, a maker is tempted, when the blocks are of considerable size, to make them with inferior material, and then coat them over with a thin layer of good material; this is most dangerous. The bodies are not unlikely to separate in drying and burning, and flake off. A perfect equality or homogeneousness of the body of clay used throughout the mass of a block is most essential to durability. In some of the work done for me at Dulwich, where diverse colours were wanted, Mr. Blashfield at first tried to colour a superficial layer with the particular chemical required to produce the colour in burning, but always using the same body, and never putting the coloured layer less than three-quarter-inch thick; but even this measure of economy he has since seen it well to abandon, and

make the mass, as I said, of the same character throughout. When this is not done, the effect is to cause a cracking and crazing of the surface, which may probably end in the rapid decay of the whole. Some of the first tesseræ made for modern mosaic pavements and ornamental tiles were so composed, and premature ruin ensued. I do not mean to say that backing up with clay of a coarse texture on a fine surface is always wrong, as it is matter of experience that the coarse "body" used for the middle of an encaustic tile will, if properly managed, satisfactorily blend with the fine body composing the back and front of the tile; but it is important that the coarse body should be so compounded that it shall blend in the kiln with the fine part of the work, and the whole, under the effect of the fire, become homogeneous.

Signor Ottolini, in the Introduction of Grüner's book on the Terra-Cotta of North Italy, says that "a paste not thoroughly homogeneous fails to sustain equally in all parts the influence of heat." And we may, I think, rely upon it that such a body would fail to sustain the influence of frost.

It is extremely difficult to obtain a bed of clay fit for making good bricks without any admixture of sand, lime, or some other earth. Generally the best brick clay is improved by tempering it with adjacent marls or loams. All strong or pure clays crack, and to make good bricks, it is necessary to mix such clays with bodies less liable to contraction and variation of form. How much more important therefore must it be in making large blocks of terra-cotta, based on the strong clays of Devonshire and Dorsetshire, to take care that a paste is produced that will dry equally without cracking, and that will bear firing to a degree at which iron melts without distortion.

One fruitful source of bad work in terra-cotta is the want of sufficient time being given for the air drying; this rather tedious process, when large blocks are wanted, is trying to the patience of the manufacturer, representing as it does interest of money as yet unrealised, and rent for shed room, kiln fuel, &c.; but it is so essential to the durability of the future work, that it cannot be passed over negligently. It will be useful to architects to have some means of forming an opinion on this point from inspection of the work, though, as I have said, the external appearance of bad and good work is, at first, hardly to be noticed; so that, after all, the character of the manufacturer must be the main guarantee to the employer and his architect for good work. At the same time, some opinion may be formed from inspection. For instance: if a piece of terra-cotta either bad in material, or imperfectly dried and burnt throughout, be soaked for five or six hours in sulphuric acid and water (equal parts), it will lose in weight—when it dries will shew efflorescence over its surface, and the liquid will be found to be charged with sulphate of aluminia or alum.

Again, where a piece of red terra-cotta not sufficiently burnt is broken, the fracture will shew a blackish tint in the centre instead of being red throughout. In like manner white terra-cotta will shew streaks or bands of orange and reddish hue. It is right, however, to say that these latter appearances arise sometimes from materials in the body, and do not always denote bad work.

As to the Heat and Weight of Fuel required for burning in the Kilns.

To burn duly a body composed of such materials as I have described, will require an equal weight of coal to the weight of the ware:—one ton of coal to one ton of terra-cotta. As to the heat required to be produced in the kiln there has been some difference of opinion; it having been stated by some at 3000 degrees of Fahrenheit, and upwards. This is probably excessive; and the real heat is so high that it is almost impossible by any pyrometer to gauge it precisely. One good test, however, of the heat necessary to fire terra-cotta that shall be really durable, is to put it at the heat at which soft iron readily melts when introduced into the kiln. Professor Faraday, I believe, stated this heat to be 1800 to 2000 degrees, while Dr. Percy puts it at 2800 degrees Fahrenheit.

As to Absorption of Rain Water by Terra-Cotta in the Building.

It is, of course, pretty well established as a fact, that with building materials such as stone their durability is almost directly in proportion to their non-porosity. I alluded in my paper to the qualities of terra-cotta in these respects, but I have since had some useful experiments made on this point, as follows: Pieces of terra-cotta, Portland stone, Bath stone, and Kelton stone, of equal bulk, viz. 12 inches square and 2 inches thick, have been thoroughly dried in a moderately-heated oven, carefully weighed, and then plunged simultaneously into water, and left there for thirteen days; at the expiration of that time, they were again carefully weighed with the following results.

	lb.	oz.		lb.	oz.
Portland stone dry, weighed	22	10	wet	23	6½
Increase of weight 1 lb. 6½ oz.					
Bath stone dry, weighed	21	14	wet	23	15
Increase of weight 2 lb. 1 oz.					
Kelton stone dry, weighed	21	11	wet	23	8
Increase of weight 1 lb. 13 oz.					
Terra-cotta dry, weighed	20	9	wet	21	8½
Increase of weight 15½ oz.					

With these few remarks, I will now leave the subject for discussion, and I am glad to know that there are many persons in this room to-night who can, and I trust will afford the meeting the benefit of their opinions and actual experience of this most interesting and attractive material to the architect.

Mr. J. M. Blashfield, Contributing Visitor (responding to the Chairman's invitation) said—It is due to the great kindness and courtesy of Mr. Barry that I am here to-night to speak on the subject of terra cotta. For the general arrangement of the experiments referred to this evening by Mr. Barry, as well as on the last occasion when this subject was before you, Mr. Barry, I may say, is accountable. He has taken such great interest in this subject, that I am sure it will be soon apparent that he has contributed very largely to the revival and establishment in a new form of a material capable of great application in architecture. I should not probably have given the same anxious care to the conduct of the work at Dulwich which I have done but for the constant suggestions and unwearied application which Mr. Barry himself gave to this development of terra cotta in many novel and varied forms. From the commencement of the Dulwich work up to the present time he has not only given the greatest attention to the entire work, but a large portion of these details have been partially modelled by his own hands. With regard to terra cotta as known years ago, I am not about to speak. We are not now dealing with it. My own acquaintance with pottery grew out of my connection with the late Herbert Minton, who was interested in Prosser's patent for making buttons from porcelain. Long before the date of this patent I had been making tesseræ from cement, broken tile, and marble, and contriving tesselated pavements; and at this time may be seen in many places the remains of mosaic and inlaid pavements made by me before Mr. Minton fabricated tesseræ. The consideration of the subject of architectural pottery occupied my mind at the time I began to make these pavements. I pressed upon Herbert Minton the importance of manufacturing architectural pottery; and some twenty-four years ago I gave him a piece of work to make with an ornamental pattern on the surface enamelled. But I had a great deal of trouble at the early period of his making mosaics to keep him up to the mark in the production of such geometrical forms as would readily combine in the formation of pavements,—of Classic, Mauresque, and Mediæval character,—and I never could at that date induce him to give attention to architectural embossed and moulded forms.

When Herbert Minton commenced making tesseræ, he used a coarse pottery body for the base, and laid on the surface a finer material. He did not make the ware as it is now made, in thin slices and little more than a quarter of an inch thick. He at first made the tesseræ in the form of parallelopipedons of coarse clay with a mere facing of blue, white, and other colours. Those colours looked well for a time, but they soon cracked and flaked off. After numerous experiments, Herbert Minton found that the best way of making tesseræ was from clay in dry powder, and of the same colour and body throughout, in the same way as Prosser made buttons, and by means of similar machinery. I recollect a communication which was made by Mr. Prosser, of Birmingham, to the Society of Arts about 1841, in which he expressed his views as to the importance of the use of compressed clay with a view to its application to mouldings; but his machinery was found to be so imperfect for compressing large pieces, that it was a long time before Mr. Minton could make from Prosser's machines an hexagonal brick above $3\frac{1}{2}$ inches diameter and 2 inches thick, from dry powder. Subsequently plain surface forms of larger area were made, and eventually slabs of 3 feet length with arabesque ornament on the face for the chimney pieces of the Conservative Club House. A communication was made, I think about 1845, with Mr. Page (who was then about to construct some bridges at Windsor), on the subject of making voussoirs for arches from clay in dry powder; but some circumstance connected with Mr. Prosser's patent embarrassed the subject, and prevented Prosser going on with experiments for making large masses of ware in that manner. Mr. Prosser had certain views with regard to the manufacture which I am unacquainted with, and which he did not, as far as I am aware, leave on record. I have now related my first acquaintance with pottery. About the year 1850 I began to make terra cotta. I had, before that, made tesseræ and some Greek vases; and in 1847 you will find in the transactions of the Society of Arts a paper I read on Greek fictile vases.

I will now, in order to take up as little of your time as possible, refer to the speciality which my ware possesses. That which is supplied for architectural work in some instances can hardly be called terra cotta. My own ware is more of a body or substance resembling the encaustic tile; its body is fine and close, and contains other elements besides clay and sand. There is a good deal of Cornish stone or pegmatite in the body which runs through the pores of my terra cotta. Great pains is taken in washing and in pugging the clay and passing it through sieves. For ordinary ware I use a sieve having 28 meshes to the square inch, and for finer ware a sieve of 40 meshes. By an admixture of old ware with the clays, and with given proportions of Cornish stone, Lynn sand, &c., I produce a body more like the close paving tile of the Minton character than the ordinary terra cotta of the day. I believe in doing this I incur larger expense for fuel than if I made a porous ware similar to the material generally used for terra cotta. In the north of England for terra cotta, fire clay, sand, and old ware are the materials commonly used. The proper amount of old ware to be mixed with a given quantity of clay is not yet determined; and it would be of great importance if the authorities of South Kensington would call in the aid of some scientific men, and determine what quantity of old ware clays of known character would bear without injury. We all know that cements will bear a given quantity of sand; but if you dose Roman or Portland cement beyond a certain amount, its tenacity is gone. So it is with the use of old ware. It is valuable up to a certain point, but as to what that point is we are (scientifically) in the dark. We make experiments, and think we are right, but in all probability we are very wrong: because there are curious facts in connection with the manufacture of Portland cement which are rather startling, and on this point I may make an observation which is most damaging to terra cotta. In the manufacture of Portland cement you run down a kind of glass. Dr. Medlock—who probably has had more experience in the examination of Portland cement for manufacturers than any other man—will confirm

the statement that there often runs out of the kiln large masses apparently of glass. This is nothing but silica of alumina (alum), lime, and a little peroxide of iron. If these glassy nodules are thrown aside and left for twelve months, they will begin to speckle and afterwards crumble to powder; but if you pulverize them, and mix the powder with water, you will make a cement of great hardness, which will take some eighteen hours to set, and the dry cement will equal about 130 lbs. weight to the bushel. I want to know, whether in dealing with these wares, and in combining the old ware imperfectly with mere clay and sand, without such a flux as Cornish stone, we may not make a material called terra cotta that may go to ruin in the same way as these Portland cement nodules fall to pieces. Some years ago I bought of a terra cotta manufacturer two mignionette boxes, which I gave to a friend at Blackheath. They remained in good condition for a time, but gradually they dropped to pieces and dissolved into mud. What was the reason of that? Simply because the combination of the materials was imperfect; apparently they had enough old ware to keep them true, but there was no substance to combine with and flux the materials and hold the particles together. We know without flux in porcelain the body cannot be held together; and we also know, where there is a proper flux, it is almost indestructible. Chemists have examined old china, and they found in it a large quantity of potash. The Etruscan vases are found to contain considerable quantities of magnesia, peroxide of iron, and lime. These are all fluxes, and, in a moderate degree, sufficient to hold the clay together; and in some of the old Greek vases there has been found an amount of peroxide of iron almost sufficient to have brought the wares into a metallic state at a very high temperature. In the old ware manufactured by the Chinese, no doubt was combined a large portion of China stone. With ordinary China clay they now use China stone as a flux to make the body perfect. In the works I have made of late, I have tried to imitate the mode of making porcelain, and to combine with whatever clay I used such bodies as would give me ware of a porcelain character. If I employ Dorset clay I use flint, old ware, so much glass and so much China stone, which is a decomposed felspar, and roasting these at a heat at which soft iron will melt, I find that the body holds firmly together. It can be tested by acids, and there is little chance of disintegration. To the Devon clays I give more fire and more flint, and a large proportion of Cornish stone. Those clays which contain peroxide of iron, like those found on Mr. Helps's estate, and those of the South of England generally, require only a very small amount of flux, because there is such a large amount of protoxide of iron in the clay, that sufficient flux exists of a metallic character. With regard to the truth of the architectural work I make, I have to depend a great deal upon the operations performed after the work is dry. When the ware is perfectly dry, it is placed in the hands of the mason to bring it into form. It often happens that I have to carve a portion of the ornament after the ware is moulded, pressed, and dried; but when I get it perfectly dry, and have removed the fine film from the surface which prevents some of the fixed air getting out, and have wrought it into true form and line, I place it with confidence in the kiln, and it almost invariably comes out correct. But if it is imperfectly dressed before going into the kiln, and one part of the ware is left with a smooth surface and the other part is left rough, I generally find that it twists. The specimens on the table have been dressed by a mason before they went into the oven, and you see they have come out true; but had they been made in the ordinary way, I should, to have kept them true in drying, have had great trouble in turning them about, and must have used a larger quantity of old ware, and I doubt whether then I should have obtained the same pleasing result. I don't know that I can say more on the subject of the material than has been already said; but I repeat, that if a scientific examination as to the proper quantity of old ware to be used with pottery were made, it would be very valuable to potters. There are certain other elements that may be used in clays for terra cotta, and there might be an examination of them and analysis of various clays also made, so that inexperienced persons might fabricate terra cotta without fear of its disintegrating or readily going to decay.

Mr. GILBERT REDGRAVE, Visitor, said—I am extremely glad of the opportunity afforded me of bringing under your notice some terra cotta which we have used largely at South Kensington, and which, both in composition and manufacture, differs greatly from the material employed by Mr. Barry, at Dulwich. Dispersed through the various geological strata, there are numerous beds of clay, all of them more or less suited to the purposes of the terra cotta manufacturer; and the question he has to deal with is not so much which particular clay is better than another, as which clay, or mixture of clays, will undergo the greatest heat, and produce the best and most durable terra cotta. In the matter of clay, I am a latitudinarian: I consider one clay may make as good terra cotta as another, provided that the manufacturer can combine the proper elements to ensure a sufficient amount of firing; but this remains to be proved by experience. We have before us, the terra cotta which Mr. Blashfield has brought to such a high pitch of perfection at Stamford and the composition of which he has just so ably explained to us; and you see also (pointing to specimens) the ware which is being used at the Royal Albert Hall, South Kensington, manufactured from pure fire-clay by Messrs. Gibbs and Canning, of Tamworth.

I should be far from admitting that any particular terra cotta was better than another, simply because it resulted from an admixture of clays. The excellence of terra cotta is after all more the result of firing, than of any skill in the compounding of the constituent clays. What we call stock bricks, are all terra cotta; and we have, in London, buildings 150 years old, built of this common ware, which have lasted without signs of decay. When I say that the degree of firing to which any terra cotta has been submitted is more a test of its goodness than any technical knowledge exhibited in its manufacture, I do not wish to detract in any way from the acknowledgments due to the manufacturer for the judgment he may display in the selection of his materials, and the many processes and details which he must bring to bear upon their preparation.

The clay used in the work at Kensington, is found in the coal measures, lying in seams above and below the coal, the very material which is destined to bring that clay to its great hardness. This clay, known as fire-clay, produces a material of the hardness of which there can be no question; it will stand heat better almost than any other substance, and taking into account the facility of its production, it compares most favourably with other terra cottas. Mr. Barry has expressed doubts as to the lasting qualities of fire-clay terra cotta; this point can be settled by time alone. As far as we have gone, it has stood well, while the most elaborately prepared terra cottas, on which the manufacturer has expended the utmost trouble, have, in many instances, decayed after a few years' exposure in London: in fact, we are forced to admit, that all the great chemical knowledge of the combination of clays which Mr. Blashfield and his brother manufacturers have attained, will not always save them from accidents and failures. There is no doubt that the terra cotta of the Royal Albert Hall, a material in which Colonel Scott has every confidence, is simply a pure fire-clay. It is obtained from a coal pit close to the manufactory and ground to a very fine powder, with a slight admixture of what is technically called "grog," or powdered terra cotta which has already been subjected to the highest heat of the furnace. This is mixed with the clay to prevent excessive shrinkage, which is liable otherwise to endanger the straightness and accuracy of the work. This clay in a pure state, and this burnt clay or grog which Mr. Blashfield, as I understand him, thinks is liable to decay, is used for the terra cotta which you see on the mantel-piece of this room: if the clay has some principle which leads it after firing to decay in the same way as the glass from the cement kilns, it cannot be the admixture and the second firing which occasion this result.

To-night you constitute the highest tribunal on these matters in the kingdom, and the question before you, is not only as to the fitness of terra cotta for employment by the architect and the best method of using it, but also whether the ware resulting from a mixture and from a pure

material have equal claims upon his attention. There are, I submit, many advantages in a pure material. I may mention the two principal ones—an almost invariable rate of shrinkage, and a great uniformity of colour. A composition of numerous substances, such as, from his description, the terra cotta of Mr. Blashfield must be, is liable, from carelessness of workmen and slight difference in quantities or proportions, to considerable fluctuations, not only in hardness and durability, but also in texture and shrinkage. One clay may have a shrinkage of $1\frac{1}{4}$ inch, and another only $\frac{7}{8}$ of an inch per foot—this in work intended for the same building, is a most serious defect, and constitutes the most important difficulty against which manufacturers have to contend. Mr. Barry has most ably explained the advantages of the terra cotta made on the principle of mixture, and I admit most willingly the superior beauty of texture, and the biscuit-like material produced by Mr. Blashfield, but I consider he attains the finish of his ware, rather at the expense of a certain vigour and artistic touch, which is obtained in a coarser and rougher, though, he must permit me to say, equally durable material, at South Kensington.

With regard to the manufacture of these blocks, there are many makers whose wares are otherwise all that can be desired, but who have adopted the practice of filling in every side of the block, and leaving only very small apertures for the grouting. The best way, both for economy in manufacture and convenience in building, is to leave the back of the block open or hollow, which then admits of filling it in solidly, and bonding it well in with the material of the building, which for terra cotta work, should rightly be brick. Terra cotta is undoubtedly the proper dressing for a brick structure—it may be used in a stone building; but there I think it is out of place and generally a failure.

Terra cotta has been found to sustain far greater weight than brick—an ordinary brick crushes at about 15 tons, whilst a block of terra cotta of the same contents would safely carry 100 tons: there is, therefore, no danger in regard to the bearing power of the material. The principal difficulty in this respect, is that there are frequently hidden flaws which are only found out by testing the crushing power of each block: if, as is the case with iron castings, every block were tested, there would be no difficulty in using terra cotta constructively. The columns at the South Kensington Museum, which have to carry a great weight, have been put together round iron stanchions, and the load is thus removed from them, though I think there would be no danger in entrusting to them the support of the entire weight.

Another point with regard to terra cotta, is that it is capable of receiving a glaze; and there are on the table two blocks made by Messrs. Gibbs and Canning, of Tamworth, upon which various colours have been applied, and here we have, I maintain, a material especially suitable for buildings in London. Terra cotta, however porous and under-baked, may thus be made durable; and if on account of unevenness or inaccuracy, it becomes necessary to destroy the surface, it may by means of this coloured glaze, be again rendered impervious to soot and moisture, and so to speak, imperishable. Almost any colour may thus be obtained, and the additional cost of glazing is very trifling. The extreme cost is in the amount of fuel required for the re-firing and liquefying the colours, and the time employed in painting the ware, which can be done by unskilled workmen. After this second firing, we have, to my mind, a material of the most perfect character, and which satisfies every requirement of the architect.

The only other fact I would wish to point out with reference to terra cotta, is that it must always remain a material in itself—it can never be a rival to stone, and the arrangement of it must be studied specially. Terra cotta can never compare with masonry in accuracy of lines, but you can produce with it a most beautiful surface, a charming variety of tints, and a certain play of colour obtainable in no other material. Terra cotta, I am convinced, will satisfy every one who has to work with it, and the failures we at present experience, result only from our imperfect knowledge of it. I look upon terra cotta, both glazed and unglazed, as a material which will eventually make London architecture permanently beautiful and imperishable.

Dr. MEDLOCK, Visitor, said—I entered this room as a visitor, little thinking that I should be called upon to make any observations on the subject under discussion. But having had some little experience in the analysis of the materials employed in the manufacture of Portland cement and of terra cotta, my friend Mr. Blashfield has asked me to make a few remarks.

Portland cement, as is well known, is made generally of three parts of chalk and one part of river mud. These materials are elutriated together in a wash-mill, run into settling backs, and when sufficiently solid dug out and dried on the drying floor; it is then mixed with a due proportion of coke, and burnt in the kiln. The semi-fused material is ground to a fine powder, and forms what is commonly called Portland cement. The quality of this cement depends upon the composition of the chalk and the mud, and particularly on the proportions in which they are mixed together. Grey chalk, containing from 3 to 4 per cent. of silica, requires a smaller proportion of mud than the white chalk, which is comparatively free from silica. The exact proportions of chalk and mud which are used are governed more by experience, and the practical trials of the strength of the cement, than by real scientific knowledge.

Of the clays which are used in the manufacture of terra cotta, little is known of the mode in which their several constituents are combined. In ordinary chemical compounds we know the exact proportions in which the acids and bases unite together; but in the natural clays we find silicic acid combined in all sorts of proportions,—with lime, with alumina, with magnesia, with potash, and with soda,—in fact, very little is known of the true composition of the silicates; hence the terra cotta manufacturer and the porcelain manufacturer are compelled to work, as it were, by rule of thumb. Not only are we imperfectly acquainted with the real composition of clays, but we know less of their fusing-points, because we have no satisfactory method of measuring heat beyond that of the boiling-point of mercury. I consider it most important for the manufacturer of terra cotta to be thoroughly acquainted with the chemical composition of the materials which he uses, and of the heat at which they run into a flux. My friend Mr. Blashfield has, I know, for the last twenty years devoted much of his time and expended large sums of money in investigating the chemical composition of clays. That his investigations have been successful is evidenced by the beautiful specimens of his works which are now before us.

Mr. CANNING, Visitor (rising on the invitation of the Chairman), said—I feel, Sir, that I have been so ably represented by my friend, Mr. Redgrave, as to the nature of the terra cotta used at the Albert Hall, that very little, indeed, is left for me to say; but I would commence by complimenting Mr. Blashfield on the perfection of the manufacture he has brought before us, and I must be allowed to say, that I think it is a very successful application of the rule of thumb which the learned gentleman who has just sat down described. I regard it as a very successful performance, considering, as chemists aver, that really nothing is known of the component parts with which the manufacturers of this material have to deal. It is nice looking, and deserves the high approbation which has been given to it. But for my own part, I have only to deal with a simple, but pure fire-clay, c mpounded by the Great Manufacturer, who has laid it there to be dug out of the bowels of the earth, and to be moulded into the shape the architect directs. This is done without any addition to it, excepting a little of the same material burnt and mixed with it, which we call "grog." That is all the mystery of our manufacture of terra cotta, and I think terra cotta has been surrounded with many intricacies and difficulties which, at first sight, would seem to argue against its general use by architects. It would seem to be too costly and too hazardous. I hope Mr. Blashfield will be able satisfactorily to fix his recipe of admixtures before he leaves the subject. The object we have in view in the first instance, is durability. There can be no economy in using an article that is not permanently good. I can say, for my own part, we have used the same materials for twenty years, without, as far as I am aware, any failures having occurred.

The next point is economy—if the material is durable, its economy is unquestionable. Another point is colour, with which, in our material, we have no embarrassment. It produces the fawn-coloured appearance as shown, being the genuine colour of our silicious fire-clay, and I am pleased to think it gives so agreeable a tint, which is seen to better effect in a larger body. We are at present working under the able staff of Colonel Scott and Mr. Redgrave, at Kensington, and I hope we are successful in producing a quality of work creditable, not only to them as architects, but to ourselves as manufacturers. With respect to another feature of our ware, the glazing, we claim the privilege to compare it favourably with the Della Robbia ware. The specimen before us, is the first trial we have made of it, and has been accomplished in the cheapest possible manner. The several colours were placed in this specimen to show the capabilities of the ware to sustain these tints successfully, not as an artistic design, but I take leave to submit it as a suggestion for the decoration of London architecture. In conclusion, I shall always be happy to compare notes with my fellow manufacturers. We are rivals only in manufacture, and it is my wish to cultivate a proper spirit of emulation amongst us, in order that we may benefit the trade at large.

The CHAIRMAN remarked that reference had been made in Mr. Barry's paper to a very valuable discovery of clay at Watcombe, in Devonshire; and he believed Mr. Etheridge, whom he saw present, could give them some information about it.

Mr. ETHERIDGE, Visitor—The deposit of pure terra cotta clay referred to is a very wonderful one, perhaps the largest ever discovered in Europe, being from 70 to 100 feet thick, and of the purest terra cotta clay, red in colour. It is as pure as that of which the Etruscan and Samian vases were made hundreds of years ago. Its quality is as fine as any of the clays of Italy that I am acquainted with, and the quantity, from the measurements which have been made, may be said to be inexhaustible. This clay has been analysed by Mr. Smith at the Laboratory of the Royal School of Mines, Jermyn Street, who has paid great attention to the analysis of clays generally, to the depth of 60 or 70 feet, and extending over a considerable area or acreage. This clay deposit appears perfectly solid and free from all admixture. It readily stands 18003 to 20003 of heat, and both the bricks and the ware produced from it are of the hardest and purest description: the colour does not change under the process of burning, and it can be used for every purpose to which terra cotta is applicable. I merely wish, in a geological and scientific point of view, to bear my testimony to the extreme value of this enormous clay deposit at Watcombe, in South Devon, believing it to be one of the most important discoveries of modern times, because hitherto we have had no such thing as a pure terra cotta clay. What we are now using, and what is generally termed terra cotta, is not the clay of the ancients. The deposit is of very recent formation or origin, and is connected with one of the most recent movements on the British coasts; and its extreme plasticity is perhaps owing to the extreme amount of denudation which the older rocks underwent, and thus the consequent finely-levigated matter of the clay itself. Mr. Maw and others have performed some experiments with the Watcombe terra cotta, and fully believe that all can be done with this clay that was accomplished in Etruscan, Greek, and Roman times. The analysis I believe is given in Mr. Barry's paper; and I may state that some beautiful works of art, in imitation of the Etruscan ware, have already been produced from it, and its discovery I regard as a very important feature for art and science in Britain.

In answer to a question from Professor Kerr, Mr. Etheridge added that the shrinkage of the clay was very slight.

Mr. BLASHFIELD said he had the highest opinion of the Watcombe clay, and produced a sample of it burnt on a rough body. It consisted of Watcombe clay and sand. He had not used it for architectural purposes; but considered that the shrinkage would be about one inch to the foot. If it were not compounded, the shrinkage would be more.

Mr. BLANCHARD, Visitor, remarked that with reference to the Watcombe clay he had had no practical experience of it, but he had seen samples, and he believed it to be a fine clay deserving great attention. In reference to terra cotta generally, so much had been said upon it in Mr. Barry's paper and by a gentleman who had preceded him, that he felt he could not profitably detain the meeting by any observations of his own on that subject.

Mr. HENRY DOULTON said—Great credit is due to Mr. Blashfield for having kept up his high standard of terra cotta. The establishment with which I am myself connected has not paid special attention to terra cotta, but we have now and then made some little efforts in that direction. The last was a very interesting one. We were making an addition to one of our manufactories in Lambeth; and I suggested to Mr. Sparkes, the Principal of the Lambeth School of Art, that an opportunity was afforded for the display of the skill of his students in modelling in terra cotta. Some heads were modelled in a very excellent manner; and one student in particular derived such advantage from the practice, that he went in successfully for the Royal Academy gold medal, and he attributed much of his success to his practice in the modelling of those heads. The building on which these heads are placed, may be seen from the South Western Railway. Another young man—a wheelwright by trade—has also had some practice in modelling at our factory, and some medallions, 4 feet diameter, free copies from the Syracusan coins, were executed by him in a very clever manner. They may be seen in the Architectural Museum. Those medallions were composed of nothing but the clay of Dorset and Devon, with an admixture of old pottery and a certain quantity of sand. Mr. Blashfield says his terra cotta partakes of the porcelain character. It is, doubtless, hard and durable. Much has been said about tests. Take a sharp-pointed steel instrument, and if you can make an incision with it in the terra cotta, the tooth of time will attack it; but if it turns the sharp point of the steel, you may be sure it is imperishable. The other test is acid, which in a short space of time will test its durability. I do not consider that fire clays have great advantage—they must be fired at excessive heat to make them imperishable. My own opinion is, that it is undesirable for architects to seek for terra cotta decorations where there are many straight lines. Probably Mr. Blashfield is able to produce wonderful results in that way. It is a question of expense; and it is difficult for architects to satisfy themselves in cheap terra cotta with straight lines. For medallions and such decorations I think terra cotta may be used with most advantage. The experiment which Mr. Canning places before us is an interesting one. If we can get colour cheaply on terra cotta, it will help to decorate buildings in London very beautifully, and at a moderate cost. The use of terra cotta up to this time will, I fear, lead to dissatisfaction, because a good deal of it is likely to go to decay; and therefore I recommend that the work should be proved by the simple test which I have suggested—that of the sharp-pointed instrument.

Mr. PAGE, C.E., Visitor, said—Mr. Chairman and Gentlemen, Mr. Barry has done me the honour to refer in his paper, to my use of terra cotta tiles on the foot ways of Westminster Bridge. Having taken great interest in the progress of the manufacture of terra cotta for architectural purposes, I would offer a few observations on the subject before the Institute. From what I have seen of the work at Dulwich, I would say, both in design, and in execution, it does honour even to the name of Barry; and that nothing I have seen in terra cotta equals the beauty of finish in the ornaments of Dulwich College. I have known Mr. Blashfield's operations for many years. He supplied the best cement with which the second half of the Thames Tunnel was completed while I was acting engineer to the works, under Sir Isambard Brunel; and I am aware of the great attention he has given to terra cotta, not in producing a cheap material, which may soon fail, but an enduring work of art as remarkable for its beauty as its strength. I look upon this revival, and may say of the introduction of terra cotta by Mr. Barry, at Dulwich, as an era in the art, and I trust that Mr. Barry's example

may be followed, and that this material may be introduced extensively in all future buildings. In 1844, I laid before Her Majesty's Commissioners for Metropolitan Improvements, under the presidency of the late Duke of Newcastle, a design for a bridge in a material very much like terra cotta, which was then being manufactured by Mr. Prosser, of Birmingham, and of which he had made hexagonal bricks of great durability, thus proving I consider, better than stone. I believe if terra cotta had been in use for the building of that gem in architecture, Henry VIIth's Chapel, the decaying state of which is shown in one of Mr. Blore's beautiful engravings before Gaybere's restoration, it would not have required to be restored, and restored in a perishable material. There is an opportunity of executing the most delicate mouldings and ornaments in terra cotta; and it is to be regretted, that architects for the sake of some fancied economy, should be driven from the use of a permanent substance, to that which we see decaying every year. This is a material with which even granite cannot be compared in durability. If you look at the balustrade of Waterloo Bridge, and pavement of Southwark Bridge, you will see evidences of decay in the granite. As an engineer who has paid great attention to art, and who hopes yet to see the day when no engineering work shall be constructed, which shall not be an artistic work also, I hail with great pleasure the revival of terra cotta, and I consider that what Mr. Barry has designed, and Mr. Blashfield has executed at Dulwich College, entitles both those gentlemen to the highest admiration in their several capacities.

Mr. C. F. HAYWARD, Fellow, said—My contribution to this discussion, will be but small, and entirely of a practical nature. In a building at Plymouth, in which I employed terra cotta rather largely, it was required to be used in conjunction with limestone and granite, and to carry considerable weight. After some estimates of the cost, I should have abandoned the attempt to apply it altogether, had it not been for the extraordinary perseverance and interest which Mr. Blashfield took in the details, and the assistance he gave me in working out the junctions of the parts, which is one of the special points necessary to be carefully attended to. I differ from the speaker who considered that the use of terra cotta should be confined to brick buildings. There is no practical reason that I am aware of, why its use should be so limited, though of course it is more certain to combine appropriately with a material similar to itself in manufacture, and some care and consideration is necessary to combine it properly with dissimilar materials.

At Mr. Blashfield's works at Stamford, I was much pleased with the artistic skill displayed by the workmen—in fact I ought to say sculptors, for I believe there were several first-rate artists of the classic school engaged upon statues, vases, &c., but the way in which my suggestions were met, and the ready adaptation of skill to the kind of work I wanted, enabled me effectually to co-operate with the workmen. A suggestion to study the carving at the remains of a beautiful early English building in the neighbourhood was carefully attended to, and one of the first results of this study, was the piece of red and white terra cotta which has just been handed about in the room. I hold in my hand the accounts for all the terra cotta work supplied to this building, over £400 worth, and as I am sure Mr. Blashfield need not be ashamed of the items, and as cost is one of the points to which Mr. Barry especially directed attention, I will give a few particulars. The cost of three triple light windows on the third floor, with columns, bases, caps, and brackets, complete in ninety pieces, was £19 13s., or only £6 11s. each. (Mr. H. here referred to large drawing details of the building.)* Two single light windows, complete in twenty pieces, including brackets, £9 2s., or £4 11s. each. The columns for these were single shafts, and with cap and base, were supplied at 20s. each. Larger ones of two shafts, with ring or band between, at 30s. each. Large cornice blocks, were 10s. each. Single light windows on the curve, in sixteen pieces, were £5 each.

* Illustrations will be found in the *Building News* for January 25th, 1867.

Other triple light windows, larger and more decorated, £16 9s., and double lights at £12 16s. each. All blocks were made hollow, of course, but as they had a good deal of weight to carry, it was necessary to have them filled up solid, for I objected to having iron stanchions inside the columns, as are said to be used now at South Kensington. The material used was broken terra cotta and Medina cement; but, as the filling in was done at the manufactory at Stamford, we did not in this instance, realise the economy spoken of by Mr. Barry, as resulting from the diminished weight, and consequent small cost of carriage, and moreover we had of course to pay additionally for this filling in, say about thirty per cent. on the original cost. This made the blocks not only more costly in carriage, but more heavy and difficult to handle. I should advise that this filling in, and all other preparations, should be done by the manufacturer himself, so that he may take the whole responsibility, because if a wrong cement (say Portland) were used, it would be liable to split and blow the work to pieces in expanding. Not one of these blocks, that I am aware of, was rejected on the score of imperfect manufacture. Perhaps if I had been always on the spot, I might have been a little more critical; but on the whole, I do not think there was any special occasion for it. Perhaps as one grows older, one gets more timid, for although upon the whole I find the work sustains well all it has to do, I might not be inclined to trust it in future, so far as to put granite upon it, because so much depends upon its perfect manufacture.

With regard to durability, one can hardly yet speak in this instance; but I may say, that I have placed side by side with it, in two places the most exposed to the weather, slabs of Ransome's patent stone, to test the material, and give others the benefit of judging the result at some future time. As to the general durability, however, we need go no further than the drawing and photograph which I now show of the Tower, or rather, Entrance Gateway of Layer Marney, in Essex, dated 1520. The large windows, parapet, and other parts of which are made of terra cotta, as well as many other examples often referred to in this room, and particularly mentioned in Mr. Barry's paper. The parapet, it is true, is somewhat dilapidated, being probably knocked about by the workmen in repairing the roof, but the windows are quite perfect, although no care has been taken to preserve them. In the case of Layer Marney, the terra cotta is used in connection with an ornamental brick structure, no stone being procurable in the neighbourhood.

I expected many difficulties in the use of this material, especially I feared that special workmen would be required to fix it, but it was all properly set, without trouble, by ordinary masons who had never seen the like before. But it was the time of strikes, and when the building was half up, the masons "went out." The arrival of the terra cotta at that juncture, was most opportune, inasmuch as the stone work was not all prepared, and the contractor was able to resist unreasonable demands, by suggesting the substitution of terra cotta for stone in other buildings he was then carrying on, not that it could have been properly so used throughout, of course.

It has been stated, that good terra cotta should have an extremely hard surface, but I have always understood that the power of cutting terra cotta, if required, was one of its advantages; indeed, highly important, in case of any slight error or difficulty in fixing. I am therefore anxious to know, whether it is always necessary that the terra cotta should have such an extremely hard external surface, as has been stated, — sufficient to turn the edge of a chisel, because, if so, the terra cotta I have used, was not so good as it ought to have been, and may not be expected to stand. In one building where a conservatory was part of the work, instead of using wooden posts, I used a few of the longer columns of terra cotta. My client, however, was somewhat fastidious, and did not like the flower work in the capitals. A compromise was made by cutting half the flowers away. It satisfied my client, and the thing was done by ordinary workmen on the spot without damaging any of the columns, or the rest of the work, and I thought it was rather a success.

Mr. BLASHFIELD.—With regard to cutting, I do not think well-burnt terra cotta can be carved with economy. A mason may dress down parts and may cut a few letters, but generally it is not a good material for carving.

Mr. HAYWARD.—The question is, Whether the fact of your being able to carve it at all militates against the quality of the terra cotta?

Mr. BLASHFIELD.—Not after it is burnt. You may carve it when dry, after it has come from the mould with 25 tons pressure, and you get a sharpness which you cannot get in Caen stone.

Professor KERR, Fellow, said—I propose a vote of thanks to Mr. Barry, and I would include in it Mr. Blashfield and the other Visitors who have taken part in this discussion. As the subject is an interesting one to myself, I would make a few remarks. Presuming that all gentlemen have spoken who wish to contribute information from their practical experience of its use as to the capabilities of the material, I may speak for those of us who have not employed the material, but desire to know how far we may attempt to do so, and I shall therefore express the opinion which I for one have formed from all that has been said. I would commence by getting rid once for all of the coloured material. The example before us can hardly be called satisfactory; and if coloured terra cotta is to resolve itself only into this form for the beautification of London, I cannot wish it success. But when I look at the other specimens, I see work which is much more likely to be beneficial. On the whole, the argument seems to lie before us in the following shape. Mr. Redgrave, representing the operations at South Kensington, states one principle, which is quite different from another which Mr. Barry and Mr. Blashfield have laid before us. The late Cardinal Wiseman made a sound critical remark when he said that brick was "the lowest of all materials." Nevertheless, as it is at the same time probably the most durable for ordinary uses, we naturally desire to discover whether we can so ornament even that lowest of all materials so as to bring it out of that condition. Of course the first effort in that direction is what we call moulded brick. This is, however, superseded and improved upon in the use of terra cotta. We are in fact dealing with a higher material than moulded brick. But directly Mr. Redgrave raises the question of manufacture, he sets forth a difference between two distinct Schools of Art, upon the apparently simple issue whether the material should be natural clay or artificial. Mr. Blashfield says it must be artificial. Mr. Redgrave, arguing at first somewhat in the abstract, lays down the theory that it ought to be the former. Gentlemen following him have described more than one species of natural clay which seems to serve, according to their opinion, all the purposes of the artificial clay which Mr. Blashfield has so carefully dwelt upon. When Mr. Redgrave argues that natural or unmixed clay is of necessity superior to artificial or mixed clay, I think the argument can scarcely be accepted upon the mere nature of things; but it is plain, artistically speaking, that if the natural material is equally good with the artificial, we should prefer the former. Turning then to Mr. Blashfield's material, we ask what are the advantages which he obtains by elaborating its artificial character as he does, when it is fairly compared with the rival specimens. On the one hand, the South Kensington specimens are made from the natural clay, untouched by the tool, and burnt as moulded. On the other hand, Mr. Blashfield's specimens, made from artificial clay, have been tooled carefully before burning; and Mr. Blashfield points in effect to the fine arrises, the smooth and perfect lines, the refinement and finish of his specimens: and all these characteristics, he says, are the effect of the tooling before burning. This, then, is the root of difference between the two schools. The South Kensington authorities say they prefer less refinement and more of the primary or natural artistic touch. Mr. Blashfield says he would sacrifice this so-called artistic touch for the sake of the greater refinement of the revised finish. I fancy if it were the French who were using this terra cotta, they would prefer Mr. Blashfield's principle; but I think the English mind, at least in the present Gothic day, may be

found to prefer the other. No doubt there is in Mr. Blashfield's work a certain elegance of finish which is highly pleasing; but looking closely at the nature of the material as the proper basis of treatment, many will say that refinement cannot be obtained without a surrender of principle; and it becomes a question whether we ought not to be satisfied in all terra cotta with a little roughness, like what we see in the old Italian work, and so confine its use to picturesque designs, and let the more refined species of work remain the province of the stone mason. I remember the late Captain Fowke explaining to me that this was the theory which they entertained at South Kensington; and I could not but admit its force. At the same time, no one would disparage the artistic form and delicacy of finish which Mr. Blashfield has produced, and which do him the highest credit. Again, I understand Mr. Blashfield to say that he prefers to carve over his work before it is burnt, because by that means he gets rid of a certain surface from the clay which impedes the action of the fire; and he thinks if the South Kensington makers were to get rid of this surface from their clay, it would be better for the terra cotta. If so, the question arises in my mind whether some other process might not be adopted to effect the object rather than resort to the tool of the mason—for instance, whether some chemical wash might not serve the same purpose without sacrificing the artistic principle which South Kensington prefers to maintain. Lastly, with regard to the large deposit of clay which Mr. Etheridge speaks of, it is clear, if the ware produced from it is only of the red colour, it would not go far to supply the demand for artistic decoration in ordinary building, because most of us would decidedly prefer the buff colour for dressings, whether to red or white brick. On the whole, it must be felt that we have learnt a good deal about terra cotta by this discussion; and I most cordially propose the vote of thanks to Mr. Barry and the other gentlemen I have referred to.

Mr. CHARLES BARRY.—I am tempted to say a great deal; but at this late hour I will confine myself to the notice of only one or two points. One thing which gives me great gratification is to find that I have started a subject which has attracted so large an interest among my co-professional brethren, and has been the means of bringing before the Institute in an official way some kind of history of what has really been done in this comparatively revived material. In doing so, I can but hail with the greatest pleasure the experience and information afforded by Mr. Redgrave, Mr. Hayward, Mr. Blashfield, Mr. Canning, Mr. Doulton, and those who have taken great personal interest in this material. I do venture to think that the subject has acquired such a hold upon the artistic feeling of architects, that the application of it will be somewhat wider than it has been, and that was the object of my bringing it before you. But if this is to be the case we must, to a certain degree, work in the same spirit. I have already indicated the various branches into which the subject may be divided. Its advantages and disadvantages I have discussed candidly. The question of cost is interesting; the question of strength and durability is not less so; and on all these points I have given you some information; and I had hoped that some of these other gentlemen would have gone over the same ground with reference to this material. If Mr. Canning would subject the terra cotta of South Kensington to the same mechanical and other tests to which I have subjected that used by me at Dulwich, it would be very interesting to us; I may say the same to Mr. Blanchard, regarding the Scotch material. With respect to the observations of Professor Kerr, I heard some of them with surprise, for I am at a loss to understand how architects, who should be artists, can be indifferent to an increased amount of refinement in their works, and should prefer it in a ruder state. I agree with Professor Kerr, that no amount of delicacy will compensate for a bad design, or for the bad grouping of light and shade in the composition,—but why they should not co-exist, I am at a loss to understand. Now there is one essential difference in the theory proposed in the production of the work at Dulwich and that at South Kensington which bears on the subject. I believe I am right in saying that all the decorative work

at Kensington has been produced on the principle of being cast in moulds and being relieved from moulds. That is not the case with reference to the work at Dulwich; and one of the advantages I thought I saw, and do still perceive, in the use of terra cotta is the power it gives you of having from the hand of the artist a really artistic work, which has not passed through a mould. You have in this material the effect due to undercutting and delicate modelling at the same time, which you cannot have in any other material. The cardinal advantage is, that you can employ high-art workmen; you have the original work from their tools burnt, and put into your building, and that is superior to the mechanical process of moulding unrelieved by undercutting, or even by the use of piece moulds. On the question of colour, we have had some colours on terra cotta put before us by Mr. Canning which were not intended, as I understood Mr. Redgrave, as exponents of his highest attainments in artistic combinations and skill, but merely to show, mechanically, that divers colours can be produced by the process which Mr. Canning employs; for I should certainly agree with the Professor in not liking the coloured terra cotta now before us. With respect, however, to this shaft on the table [referring to a specimen of the Dulwich work], I would draw attention to it as a most interesting example.

In the design of the College, the windows of the first and second floors have shafts of this diameter, about 6 inches, and I should have liked to have had these shafts of some polished material, serpentine, or something of that kind, had not cost forbidden it. I then induced Mr. Blashfield, to try to produce the effect of serpentine in terra cotta, as that would of course be at much less cost. He made some experiments, as usual with him, with the greatest zeal and liberality. I proposed to him, it seems, however, a difficult problem. He solved it as far as this specimen is concerned, but I wanted these shafts by hundreds, and that he could not ensure: if he did not succeed, I cannot reproach him with any lack of effort. I was rather sorry to hear the doubting way in which Dr. Medlock spoke of the combination of clays to be used for architectural terra cotta. When he says we know absolutely nothing about it, I hope he speaks as a scientific chemist, and not in a practical point of view, for I am under the impression, that practically, we do know a great deal; and whether through a knowledge of chemistry, or the rule of thumb, we have found some compounds which are very lasting and durable; and for my own part, I think the secret of durability consists in what Mr. Blashfield terms the finding out some kind of flux, which when exposed to the kiln, will permeate throughout the whole mass. That is the secret of durability, and not to trust to an outside skin merely, which will more or less vitrify. Unless we have a homogeneous material of perfectly similar texture throughout its mass, we do not have that kind of material which I hope terra cotta really will be. In conclusion, I trust, that having initiated the subject, it will be followed up by our having from others statistical information concerning experiments which have failed, as well as those which have succeeded, so that we may see the successful and practical revival of the use of a material which I think deserves all the attention we can give to it.

Mr. BLASHFIELD explained that Mr. Barry required shafts from 6 to 7 feet high, in two pieces. These were (he said) to carry a heavy weight, the arches of double and triplet windows. It was important that the columns should be strong, and the difficulty was to make them in two pieces, from 3 to 4 feet long, to carry a true line, and combine like rubbed stone or rubbed serpentine. He added that he was going on with experiments with these columns in different ways, and he looked for ultimate success; but at present he had not succeeded in making a glazed column, of the size mentioned, in pieces which should fit each other with the same precision as rubbed stone.

The CHAIRMAN, in putting the resolution of thanks to Mr. C. Barry and the other gentlemen who had joined in the Discussion, said it had been one of great interest and practical value, and the motion having been carried by acclamation, the meeting adjourned.

SESSIONAL PAPERS

OF THE

ROYAL INSTITUTE OF BRITISH ARCHITECTS,

Incorporated in the Seventh Year of William IV.

PATRONESS . . HER MOST GRACIOUS MAJESTY THE QUEEN.
PATRON . . . HIS ROYAL HIGHNESS THE PRINCE OF WALES.

COUNCIL.

President—WILLIAM TITE, M.P., F.R.S., F.S.A.

Vice-Presidents.

CHARLES BARRY. JOSEPH CLARKE, F.S.A. SIR CHARLES LANYON, M.P.

Honorary Secretaries.

Foreign Correspondence—T. L. DONALDSON, Past President. *Home Duties*—JOHN P. SEDDON

Ordinary Members of Council.

E. CHRISTIAN.
F. P. COCKERELL.
J. EDMESTON.
J. FERGUSSON.
C. F. HAYWARD.
E. B. LAMB.
F. MARRABLE.
C. C. NELSON.
J. PEACOCK.
J. L. PEARSON.
T. ROGER SMITH.
A. WATERHOUSE.
DAVID BRYCE.
M. E. HADFIELD.
R. M. PHIPSON.

Auditors—EDWARD ROBERTS, Fellow, and JOHN J. THOMSON, Associate.

Treasurer & Banker—SIR W. R. FARQUHAR, BART., 16, St. James's Street.

Honorary Solicitor—F. OUVRY, 12, Queen Anne Street, Cavendish Square.

Assistant Secretary—CHARLES LOCK EASTLAKE, 9, Conduit Street, Hanover Square.

Librarian—S. W. KERSHAW, 9, Conduit Street, Hanover Square.

LONDON:

PUBLISHED AT THE ROOMS OF THE INSTITUTE, 9, CONDUIT STREET, HANOVER SQUARE, W.

1868.

[ENTERED AT STATIONERS' HALL.]

The Right of Reproduction and Translation is reserved by the Council.

LONDON:
J. DAVY AND SONS, PRINTERS, 137, LONG ACRE.

Royal Institute of British Architects.

At the Ordinary General Meeting, held on Monday, 30th November, 1868, C. BARRY, Vice-President, (afterwards G. G. SCOTT, Fellow) in the Chair, the following Paper was read :—

ON MOSAIC DECORATION.

By AUSTEN HENRY LAYARD, ESQ., M.P., D.C.L., Honorary Fellow.

GENTLEMEN,—I desire to call your attention this evening to a subject of some interest, both to the architect and the public, "mosaic decoration." It has already been treated, and very ably treated, as every thing he takes up is very certain to be, by my friend, Mr. Digby Wyatt, in a paper read before the Institute, on the 17th March, 1862. He dealt with the subject as a member of the profession, I can only do so as an amateur, without much practical experience. But since he read his paper, much has been done in mosaic, and in the direction which he then pointed out. I trust, therefore, that I may add a little to the information furnished to the Institute by him.

I have long turned my attention to the subject of architectural decoration, external and internal. It has been connected in my mind with two great objects, public instruction and public enjoyment. In public instruction, I would include all that is calculated to raise the character, cultivate the understanding, and refine the taste, as well as to impart actual knowledge. By public enjoyment, I mean that exquisite sensation of delight and satisfaction which arises from the contemplation of the beautiful, and that pleasurable effect, which, although difficult to define, and very often almost imperceptible, is produced by beauty of form, proportion and colour upon most men.

With a desire, then, to ascertain how these two objects could be best promoted in this country, I have studied, as well as my opportunities would permit me, architectural decoration, external and internal, as employed by the ancients and the moderns in different parts of the world, in the west and in the east, but especially in Italy, which now affords us the best school for the investigation of this subject. But to go into the general question at any length, would be to occupy your time far beyond the usual limits. I shall therefore confine myself this evening to only one branch of it, viz., the decoration of public buildings, religious and secular, in this country, and the materials which may be best employed for such decoration.

It has always seemed to me, that the numerous public buildings which have been erected during the last few years, and which are now in the course of erection, or in contemplation in England, and especially in the Metropolis, would afford an unexampled opportunity for educating the public mind, and improving and elevating the public taste, through the means of mural decoration.

Mr. Ruskin, with his usual eloquence and just appreciation of the real value of art, has observed that the church of S. Mark's at Venice, was "to be regarded less as a temple wherein to pray, than as itself a Book of Common Prayers, a vast illuminated missal, written within and without in letters of enamel and gold. The common people were taught their Scripture history by means of the mosaics, more impressively, perhaps, though far less fully, than ours are now by Scripture reading. The walls of the church became the poor man's Bible, and a picture was more easily read upon the walls than a chapter." "Never," he exclaims, "had a city a more glorious Bible?" And at every hour of the day, he might have added, the book is open. Our own churches might afford, as they perhaps once did afford, public instruction of a similar kind; and might, at the same time, become beautiful and solemn monuments like St. Mark's. Our public buildings might do for our history, political and intellectual,

what our churches might do for our religion. There have hitherto been two difficulties in the way—English prejudice, and English climate; the first chiefly affects the churches, the other, both our churches and public buildings.

As regards English prejudice, there is much yet to get over, although a great deal has been effected in that respect. I do not intend to enter into the reasons for this prejudice, or to seek to combat it. Suffice it to say, that the strong re-actionary feeling against the influence of the Church of Rome, which set in at the time of the Reformation, and which received additional impetus during the Commonwealth, is yet powerful among us, and that church decoration is still connected in the imagination of a vast number of people with the tenets of the Roman Catholic faith. But I will presume, that this prejudice has now greatly subsided, and that we are at liberty to decorate our churches to our heart's content, so long as we do not introduce into them any figures or symbols which may scare good Protestants, without our orthodoxy being called into question.

With respect to our public buildings, there is no such prejudice existing, although there is still floating about, even amongst educated people, who ought to know better, that strange notion that decoration is un-English, unsuited to our climate, and vulgar. A step in the right direction, though unfortunately, owing to various circumstances, not a very successful one, has been made in the ornamentation of the Houses of Parliament. Had that attempt been more successful, the example would, I doubt not, have been more extensively followed in this country than it has been.

The climate difficulty is really the one which stands in our way, and which we must seek to get over. Owing to it, the attempt made in the Houses of Parliament, has been unfortunately arrested, and a great work which might have added to our national glory, has been left unfinished. If the difficulty can be removed, I believe that with the general improvement in public taste, and with the desire for educating the people which now prevails, we may see our churches and our national edifices covered with mural decoration which would serve to cultivate, refine and instruct the masses.

For some years, I entertained a hope that wall-painting, either buon-fresco, fresco-secco, or water glass, might be adopted in this country. I had carefully examined, and indeed partly traced, almost every wall-painting in Italy. I had convinced myself that, except perhaps at Venice, fresco would resist the effects of climate and of time, when only protected against them with moderate care. The frescoes of Giotto, in the Arena Chapel and at Assisi, (in fresco-secco be it remembered), are almost as fresh and transparent as when he painted them, except where exposed to wilful injury, or, as I regret to say they still are, to the grossest neglect. The frescoes of Ghirlandajo, and the great masters of his time, are only blackened by the smoke of candles and incense, or by dust and dirt never removed. The beautiful decorations of the library of the Cathedral of Sienna, are as bright as the day on which Pinturicchio finished them. The frescoes of Pordenone, in the church of S. Maria della Campagna, at Piacenza, have almost acquired the consistency of enamel, and would seem to be indestructible. In Venice only, owing, it is alleged, to the extreme moisture and saltness of the sea air, wall-painting seems to have partly failed. The great works of Giorgione, Titian and other masters of the Venetian School, which once embellished the palaces of that city have perished; and of those of Pordenone, which adorned the cloisters of S. Stefano, only fragments now remain. But these frescoes, it must be observed, were on the exterior of buildings, and therefore completely exposed to the effects of the atmosphere. Tiepolo's frescoes in the Labbia Palace, and in some churches, do not appear to have yet suffered. But still it would seem that the Venetians distrusted the durability of fresco, and never employed it on a large scale even for internal decoration, when it was being so used in almost every other city of Italy.

With the examples of fresco-painting which I have mentioned, and with my desire that mural decoration on a large scale should be introduced into this country, I was rejoiced to see that which was being done under the direction of the Fine Arts Commission, of which the Prince Consort was

President. I lost no opportunity of advocating, publicly and privately, fresco decoration. Amongst those, who took the same view of the subject as myself, was my distinguished friend, Mr. Watts. But he did more than I could ever hope to do in the cause, and with a devotion to his art and a public spirit, which are the best accompaniments of genius, he undertook to execute without remuneration, a vast fresco on the walls of the Hall of Lincoln's Inn. That work, criticise it as you like, is the greatest of its class on this side of the Alps; and I cannot believe that any man of feeling can be insensible to its grand and solemn character, or any man of taste to the additional value and majesty it gives to the architecture. Unfortunately, Mr. Watts has never completed the decoration of the Hall, all the empty spaces in which should be treated in connection with the fresco, forming the principal feature in it. I do not think that we are yet sufficiently impressed with the fact that in decoration, completeness and general harmony are essential, and that without them, the true and full effect of a great fresco, or any other similar work, can never be properly appreciated.

My hopes with regard to fresco painting were doomed to disappointment. I have no reason to believe that any serious deterioration is taking place in Mr. Watt's fresco at Lincoln's Inn; but in the Houses of Parliament, some of the frescoes had scarcely been painted, before decay commenced, and many of them are even already almost gone. The same thing has taken place with the late Mr. Dyce's frescoes in All Souls' Church, in Margaret Street, which, I am informed, have required almost entire re-painting.

I was at one time inclined to assign this rapid decay to some defect in the materials employed, either the pigments, the intonaco, or the lime—especially as the same deterioration had occurred in some of the frescoes at Munich, (though by no means in all, it would appear), where at least the fault could not be laid upon the English climate. The Germans, however, attributed it to the effects of the atmosphere acting upon the exterior surface of the painting; and to prevent this, they invented a method of covering the fresco with a solution of silicate, called water-glass, which was supposed to be impervious to the air. The great frescoes by Kaulbach and others at Berlin, have been painted on this principle, and Mr. Maclise and Mr. Herbert have adopted the process in their most recent works in the Houses of Parliament. It is perhaps too early to pronounce decidedly upon the durability of the water-glass, but there are grounds for fearing that it will not resist the insiduous attacks of our London smoke. Dr. Percy, after a very careful scientific examination and analysis, carried on under official instructions, has come to the conclusion that no wall-painting, whether executed in buon-fresco or fresco-secco, can resist an atmosphere impregated, as that of London is, with the chemical substances evolved from the consumption of coal. He doubts even the efficacy of water-glass, and gives it as his opinion, that Mr. Herbert's well-known fresco will not be safe, except under glass. The scientific investigations of Dr. Percy have unfortunately been confirmed by the practical experience of Mr. Digby Wyatt.

I confess to great disappointment at this unexpected result of the attempt to introduce fresco-painting into England. It is a noble art—the one declared by Michel Angelo to be best fitted to shew the genius of a man—the one which gives the really great painter the widest influence over, and can bring him into the closest communion with the great mass of his fellow-men. It can raise the great painter to the level of the great poet. Think one moment of the fame which Leonardo da Vinci, Michel Angelo and Raphael have achieved through their wall-paintings! Leonardo's "Last Supper," is more widely known than any poem that was ever written—not excepting the "Iliad." Throughout the whole civilized world, some kind of copy of this immortal wall-painting, may be found in the palace and in the cottage. But after what has occurred, I am afraid that we must give up the hope of seeing fresco-painting introduced on any considerable scale into England, or at least into London.

Thus disappointed, I turned my attention to mosaic, as a means of supplying the place of fresco. With this object in view, I have carefully studied most of the finest examples of mosaic decoration in Italy.

It is unnecessary for me to enter into the history of mosaic. That has been done already by Mr. Digby Wyatt in his paper, to which I have already referred. It is sufficient now to say, that the art of putting together small cubes, or tesseræ, as they are technically called, of different substances, so as to form patterns and figures, either in monochrome or in various colours, is one of very ancient date, and was known even to the earliest civilized nations, such as the Egyptians, Assyrians, and Babylonians. Mosaic was applied to the decoration of walls and pavements, and was extensively used, especially for the latter purpose, by the Greeks and Romans in their public and private buildings. Owing to the durability of the materials generally employed, such as hard marbles and porphyries, enamels or glass, and terra cotta, mosaic has defied the ravages of time, probably more effectively than any other architectural decoration. To this day, the remains of mosaic pavements are the most usual indication of Roman sites in England and in many countries of Europe, as well as in parts of Asia and Africa. But pictorial mosaic on a really large scale was first used for the decoration of public buildings during the later days of the Roman Empire, and during the supremacy of Byzantium, and in those countries which derived their civilization and arts from Rome and her Eastern successor. It took its chief development after the spread of Christianity, and in the decoration of Christian edifices, so that we may call it essentially a Christian art. The most magnificent examples of ancient times were to be found in the churches of Christian Rome, Constantinople, and Ravenna. It is to this Christian mosaic that I wish now to draw your attention. I shall not, therefore, touch upon other kinds of mosaic, for a description of which I refer you to Mr. Digby Wyatt's paper.

The chief features, then, of this Christian mosaic are the vast extent of wall-surface to which it was applied, its most frequent use on domes, apses, and curved surfaces, and the representation of figures and ornaments on a gold ground; although a gold ground was not always used, as in the early mosaics in S. Pudentiana and S. Prassede, and in the baptistery of S. Giovanni Laterano in Rome, in which the ground is blue. In Italy, the epithet "Byzantine" is indiscriminately, though wrongly, applied to this mosaic. It is true that the art flourished in the East when it had almost died away in the West, and that Italy owes to a great extent to Byzantine artists its revival. But a direct Roman influence, as Mr. Digby Wyatt has well pointed out, may be traced in Italian mosaics up to the eighth and ninth centuries. The art, however, flourished contemporaneously in the Eastern and Western parts of the Empire.

The extreme richness of this mode of decoration, and, at the same time, its grand and solemn character when used in large masses, made it especially applicable to religious purposes, and it appears to have been generally employed for the embellishment of churches, although there are several recorded instances of royal palaces having been very profusely adorned with it. A vast mass of ancient mosaic-work has perished; no small amount in the East is still covered with whitewash and plaster. There scarcely seems to have been a church or baptistery of any importance built within the precincts of the Byzantine Empire, that had not more or less mosaic decoration. The fashion spread across the Alps, and we find Charlemagne decorating his basilicas and palaces with mosaic.

This general use of mosaic led to improvements in the materials employed. Marbles and porphyry could no longer be exclusively used, and earthenware did not furnish the required durability. Enamels, or vitrious substances, which the Italians call "*smalti*," were mixed with them. The art, too, of enclosing gold leaf between layers of glass (a very difficult one, and requiring great nicety of manipulation) was also discovered—there is no evidence, I believe, that it was known in pure classic times—and thus the gold ground, one of the peculiar features of this mosaic, could be effectively executed.

Of these early mosaics the most remarkable now preserved are those of S. Sophia, of a church at Salonica, and of the baptistery of Constantine or S. Costanza at Rome, which shews a curious mixture of

Pagan and Christian figures and symbols, and the style of which almost approaches that of the painted ornaments in the baths of Titus; those of the apse of St. Pudentiana, also of the fourth century, of the monumental chapel of Galla Placidia and of the baptistery at Ravenna, and of S. Maria Maggiore, at Rome, of the fifth century; and those of S. Vitale, of S. Apollinare in Classe, and of S. Apollinare Nuovo in Ravenna, of the sixth century.

Unfortunately, few of the early mosaics at Rome, and even Ravenna, are free from considerable restoration, and their original character is in many instances much destroyed. Frequently these restorations are even made with mere coloured plaster.

I will now direct your attention to those edifices which furnish the examples of mosaic decoration most deserving of study, with a view to the use of mosaic in this country. I exclude S. Sophia, because the mosaics on its walls are for the most part concealed by plaster. In its original state it must have been, as far as the interior is concerned, one of the most glorious buildings that the world ever saw. In no other, probably, were such vast spaces covered with the richest mosaic decoration, and every part that was not so covered appears to have been panelled with the rarest and most costly marbles. I had the good fortune to see S. Sophia when under repair, and when the plaster had been removed, under the direction of an Italian architect, Signor Fossati. The effect of this partial revival was truly magnificent. Some idea of the variety and richness of the details may be obtained from Salzenburg's work, which is in your library. I would particularly dwell upon the extraordinary preservation of the mosaics. They had been covered since the Turkish conquest, and probably had not undergone much restoration in previous times.

The examples, therefore, of mosaic, which I would particularly point out for imitation, if the time should ever come, as I hope it will, when people in this country will be duly impressed with the value of internal decoration, are S. Mark's at Venice, the Cathedral of Monreale, and the Capella Reale at Palermo, and the basilicas at Ravenna. I do not place these buildings in order of date, but according to their importance as illustrating mosaic decoration.

S. Mark's, taken on a whole, is the most perfect example of internal decoration in the world. In other edifices you may probably find instances of details, or detached mosaics, more beautiful than any in S. Mark's, but you will nowhere find an example of one grand and noble conception so thoroughly and completely carried out. It furnishes, too, the fullest and most valuable chapter in the history of mosaic, for in this one building we have specimens of mosaics extending over a period between the eleventh, or certainly the beginning of the twelfth, to the end of the seventeenth century, and consequently comprising a variety of styles, and showing many different modes of employing mosaic. Every square foot of the church, the baptistery, and the vestibule, domes, apses, sides, and pavement are covered with mosaic work, except where the richest marbles panel the lower parts of the walls. There is no uncovered or naked space. The eye, I may say the mind, is completely satisfied. Nothing looks as if it were unfinished, or as if there yet remained anything to be done.

I cannot imagine that any one could enter this glorious edifice without being deeply impressed with the solemnity and majesty, and, at the same time, with the exquisite beauty and perfect harmony of all around him; without feeling that if we are to have decoration in our sacred edifices on a large scale, and so as to add to their religious character, and, at the same time, to produce a sense of enjoyment of the purest nature, mosaic is the most appropriate of all decoration. The lustrous surface of the enamels, the large masses of gold ground, the richness of the colour, produce an infinite variety of the most beautiful effects, ever changing as the sun changes its place. S. Mark's is never the same. Enter at any hour of the day, in summer or in winter, and whether the sky be clear or overcast, and you will ever be surprised and delighted by some new and unexpected effect. In the

morning the recesses of the nave, and the grand solitary figures of Christ, the Virgin, and the Evangelists, will be revealed to you. At mid-day, when the full light of a southern sky is equally diffused over the interior, the many domes and vaults are so illumined, that every detail in that vast maze of figures and ornament, can be plainly detected. And when the rays of the setting sun stream through the western window upon the great apse above the high altar, the majestic form of the enthroned Saviour seems to float in a sea of burnished gold. Even when the shades of night are fast gathering over the lower part of the building, a mysterious and solemn light lingers for a time on the golden domes and vaults of the upper, like the bright clouds which float in the sky after a Venetian sunset.

The singular harmony, notwithstanding the abundant richness of the gold grounds, which prevails throughout the decoration of S. Mark's, is owing to its completeness. Any whitewash, or plaster, or blank undecorated space, such as one sees in our churches, would have been an eyesore, and would have marred the marvellous beauty of the whole. Decoration, when thus complete, whatever may be the wealth of gold and colour lavished upon it, is never vulgar or tawdry, but on the contrary, when a just balance is preserved in them, it is sober and harmonious, and can be made eminently subservient to religious purposes. It is only when decoration is introduced as if it were something not forming an essential part of the building itself, but only put there for show, and as if too precious except to be doled out with a niggard hand, that it does become vulgar and tawdry, and appears inconsistent with the objects of a sacred edifice.

S. Mark's teaches us that it is very necessary to avoid white spaces, and especially white plaster, when materials so rich as mosaics are employed. We see this well established in the sacristy. Its vaulted ceiling, lunettes, and spandrils, furnish one of the most exquisite examples of cinque-cento mosaic-work with which I am acquainted. But the general effect of the chamber is greatly impaired, and an appearance of weakness and want of finish is given to it by a panelling of white marble, which runs completely round it, between the mosaic decoration, and a skirting and benches of dark walnutwood below.

In S. Mark's we can study, and satisfy ourselves as to the best mode of employing mosaics, and the style best suited to our churches, should mosaics be introduced into England. We have in this very museum of mosaic decoration, specimens of all styles and manner of work. The most ancient are simple figures on a gold ground, probably the work of Greek artists, or if not, certainly copied from them, and properly termed Byzantine. Such are the colossal figure of Christ seated on a throne, in the apse over the high altar; the figures of patriarchs, saints, and apostles, in the domes, on the side-walls of the nave, and on the pendentives; and the group of Christ, the Virgin, and St. John, over the principal entrance. So also are some of the figures, arranged in processional order in various parts of the church—a tradition of the classic period of mosaic, as seen in the basilicas of S. Vitale and S. Apollinare Nuovo, at Ravenna.

In the baptistery and vestibule, and in the semi-domed recess over the most northern exterior entrance, we have examples of the work and design of the thirteenth and fourteenth centuries. A more complete grouping of figures is attempted, and more variety in the tints. The tesseræ, in some instances, are very small. The general design and arrangement of the figures are still strictly architectural. In the chapel of the Mascoli, one of the most beautiful portions of the church, the waggon-shaped ceiling, decorated by Gianbono towards the end of the fifteenth century, shows how the growing feeling for classic ornament had modified the old manner, and had produced a style very appropriate to architectural decoration in mosaic. In the sacristy, in the works of Zuccati, we have the graceful and flowing ornamentation, and the broad treatment of the draperies, which mark the cinque-cento period, still, however, made subservient to the architecture, and forming part of it. Lastly, on the upper part of the walls to the left of the high altar, in the vaulting over the western end

of the nave, and in the lunettes over the exterior entrances, and over the central entrance in the vestibule, the mosaics having been executed from cartoons by Titian, Tintoretto, Salviati and other great masters of the sixteenth and seventeenth centuries, we see how the mosaist vied with the painter in producing pictures, not only without reference to the architecture, but altogether independent of it. I will point out hereafter, which of these different modes of treatment I consider best adapted to our modern buildings, and most consistent with the legitimate use of mosaic.

Perhaps the most perfect specimen of mosaic decoration, after S. Mark's, with which I am acquainted, is that of the "Capella Reale," or as it is frequently called, the "Capella Palatina," in Palermo. The chapel was built in 1132, and the mosaics were finished in 1143, or soon after. Consequently they are all of the same period, although the original character of many of them has been somewhat altered by modern restorations. I place this interior next in order after S. Mark's, because although much inferior in size to other buildings similarly decorated, the decoration is complete, leaving nothing to be desired. It forms one beautiful and harmonious whole, without a spot upon which the eye can dwell with regret. It also possesses that solemn religious character, and shews that infinite variety of effects, which form the glory of the Venetian temple. The cupola, the sanctuary, the walls of the aisles and nave, are covered with mosaics, in which figures of Christ and the Apostles, and scenes from the lives of St. Peter and St. Paul form the principal subjects. Beneath the mosaics is a skirting of rare marbles. The pavement is of mosaic work ("opus Alexandrinum,") of serpentine, porphyry and hard marbles.

The Cathedral of Monreale, near Palermo, magnificent as it undoubtedly is, and superabundantly rich in mosaics, which cover, according to the Duke of Serra di Falco, no less than 97,973 Sicilian palms (a palm being rather less than a foot) of enamel mosaic, and 13,041 of "*pietre dure*" mosaic (opus Alexandrinum), requiring for their execution the continuous labour of 150 mosaists for three years, does not produce the same impression as S. Mark's. This arises from the roof being in timber, from the absence of those numberless curved surfaces which distinguish the Venetian church, and which are especially suited to mosaic, and from the greater diffusion of light. The effects are less solemn and religious than those of S. Mark's. Still, however, it is a glorious building, and furnishes to the architect an invaluable collection of beautiful designs and patterns of a particular period and style —the church having been entirely built and decorated towards the end of the twelfth century. It affords, too, an important example of the use of mosaic for pictorial purposes on side walls, which at Monreale are covered with stories from the Old and New Testament. The colossal form of the Saviour on a gold ground in the semi-dome over the central apse, has also a grand and imposing effect, and is a fine example of the manner in which this architectural feature in a church can be appropriately decorated with a single figure. The lower part of the interior walls are panelled with marble slabs, divided by bands of mosaic in endless variety of designs.

Unfortunately the ancient Basilicas of Ravenna have either been allowed to fall into decay, or have been so much changed by modern restorations and alterations, that we can no longer judge of the effect which the mosaics they contain must have produced when the whole ornamentation of the interior was in complete harmony with them.

What is usually called the "Jesuit Architecture" of Italy—that vulgar Renaissance which is so offensive to good taste, and so utterly opposed to all solemnity and true religious feeling—introduced the fashion of breaking up the interiors of ancient churches by the introduction of side chapels, and of vast altars composed of columns, cornices, and pediments of marble of every hue, piled up without any reference whatever to the surrounding architecture, or without any pity for the frescoes and ornaments which may have adorned the walls. The original simplicity and symmetry of almost every sacred building of any antiquity in Italy, has thus been destroyed. Most fortunately, S. Mark's, for various

reasons—amongst them, perhaps, the jealousy with which its clergy has preserved its antique church ritual—has been spared, and remains, both in form and ornamentation, nearly as it was intended to be by its builders.

In the Basilicas of Ravenna we can only judge of each mosaic as an individual example, with reference to the actual work and the capabilities of the material. We can form no adequate conception of the general effect which it was calculated to produce as a portion of the general decoration. The richness and harmony of colour are neutralised by the vast spaces of plaster and naked walls by which, in most instances, these mosaics are surrounded; with the exception, however, of the tomb of the Empress Galla Placidia, which still maintains, as a whole, much of its ancient character and beauty. But in themselves, the mosaics are deserving of the most careful study, as belonging to the best period of early Christian mosaic art. They are especially valuable to the architect as affording some of the finest examples of the treatment of pictorial mosaic, and of the technical qualities of the material. For beauty and purity of design, which nearly approaches that of classic times, and for exquisite harmony of colour, the mosaic of the Good Shepherd in the tomb of Galla Placidia is one of the most perfect specimens of the art that can be found. For the processional treatment of subjects, and for ancient costume and architecture, the Basilicas of Ravenna furnish most excellent models, especially the church of S. Apollinare Nuovo. Indeed, at no period were the use and capabilities of mosaic so thoroughly well understood as in the fourth, fifth, and early part of the sixth centuries.

Before concluding this branch of the subject, I would mention, as an example of exterior decoration in mosaic, the cathedral of Orvieto. To judge of the full effect of the mosaic pictures which adorn its gorgeous façade, it must be seen from a distance. Its position — standing majestically on a platform supported by precipitous cliffs rising out of a deep valley—is admirably suited to the display of its richly-ornamented façade. The mosaics, which are modern, are not of the best style, and are too pictorial for the architecture unless seen from afar. Still the effect is undoubtedly very striking, especially on a bright day when the façade sparkles in the sunlight, with all the hues of the rainbow. I should hesitate, however, to recommend similar decoration for imitation in this country.

No one acquainted with the magnificent examples of mosaic decoration which I have described, will probably be inclined to doubt its great value, at least for the ornamentation of sacred edifices. And I think that those who have no prejudices and preconceptions on the subject, will be equally disposed to agree with me, that if mosaic can be used effectively and advantageously in sacred edifices, there is no reason why it should not with equal propriety be employed in secular buildings. All that is required for this purpose is a knowledge of the principles which regulate its proper application, and of the capability of the material.

In many respects mosaic is undoubtedly preferable to fresco for decoration, especially in our climate —even without reference to the atmospheric influences upon wall-painting. It is more durable, it is more lustrous, it is more effective when employed at a considerable distance from the eye; it is far richer and more brilliant, especially when gold grounds are extensively used, in the subdued and frequently insufficient light of our climate; and lastly, in case of injury, or deterioration from dirt or other causes, it can be restored and cleaned without any detriment, or loss of character, to the original work. However, when making this observation, I would add that fresco painting and mosaic have distinct and separate attributes and capabilities, and that when both can be employed under equally favourable conditions as in Italy, they need not interfere with one another. And this reflection leads me to endeavour to point out what the proper attributes and capabilities of mosaic decoration really are.

Let me remind you, in the first instance, that I am not dealing with that minute and elaborate mosaic work, chiefly practised at Rome, which is intended rather for the reproduction of easel pictures and altar pieces than for architectural decoration. This kind of mosaic is rather to be avoided than imitated, and with it the architect has nothing to do.

Legitimate mosiac decoration, like all true architectural decoration, should, in the very first place, be made subservient to the architecture—or rather, it should be made essentially part and parcel of the architecture. The truly great architect will devise and superintend the decoration of his own building, even, if possible, to the minutest details; for there is nothing which adds more to the effect of an architectural monument, and to its grandeur and nobility of character, than the feeling that one clear, well-defined and lofty conception pervades the whole of it. When this identity of conception is apparent in a building, however inferior it may be in certain details to another edifice in which this homogeneity is wanting, it will always be far superior to it in the general effect produced.

In order, then, to make mosaic decoration harmonise with architectural lines and forms, all the best designers for mosaic have sought to give their cartoons a certain conventional and architectural character, and have avoided any attempt to make the mosaics look like pictures in oil. As, from the nature of mosaic (tesseræ placed together with more or less precision) it is best seen at a distance, it should be used, especially when pictorial, at a certain height from the spectator. There are no mosaics in S. Mark's less, I should think, than 10 feet from the pavement, and the greater number are at a very considerable elevation. Consequently, distinctness of outline, not only in the figures themselves, but in their extremities and parts, so that they be not lost in the mass, is required. When grouped, each figure should stand out boldly, and not interfere with any other figure. For this reason, the mosaists of the best periods of the art generally preferred the processional treatment of their figures. Any attempt to produce different planes of distance, which require, to be properly represented, all the subtle tints of the painter's palette, should be avoided. The outlines should be distinct, well-defined, and marked somewhat heavily; their darkness and thickness being regulated according to the elevation of the mosaic. This rule applies to both pictorial and purely decorative work. Reference should be specially had to the style of architecture of the building; always, however, bearing in mind that, although the general arrangement of lines and treatment of the subject may be varied to suit it, yet that whether mosaic be introduced into a Classic, Gothic, or Renaissance edifice, the general laws which regulate its use are the same.

I may cite, as an example in illustration of what I have said, the semi-dome over the most northern, and the lunette over the adjoining, exterior entrance to S. Mark's. In the semi-dome, the original mosaic of the thirteenth or fourteenth century (its precise date is doubtful) represents a procession of figures bearing the body of St. Mark to the church, a view of which, as it appeared when the work was executed, is seen in the background. The subject, simply and somewhat rudely treated, harmonises perfectly with the surrounding architecture. The mosaic of the adjoining lunette represents the Doge and Venetian Magistrates venerating the body of St. Mark. It was executed from a cartoon by Rizzi, and is probably one of the finest known examples of enamel mosaic, both as regards execution, and the wonderful beauty and richness of the colours, especially the blues, purples, and golds. But this mosaic, however admirable in design and in execution, does not combine or harmonise with the architecture. It looks like a fine picture suspended on the façade, and which might have been hung any where else. Consequently its effect is infinitely less pleasing than that of the earlier, simpler, and ruder mosaic. What the effect of all the entrances must have been before the original mosaics were removed to receive the later, may, to some extent, be judged of by Gentil Bellini's great picture in the Academia, in which the façade of S. Mark's is represented with almost photographic minuteness, as it appeared in the fifteenth century. No one will doubt that it was superior to that produced by the modern mosaics.

I may add that, in order to increase their effect, almost all good pictorial mosaics with which I am acquainted are surrounded by a band of appropriate ornament in the same material, the width of which depends upon the elevation and position of the mosaic picture.

It may be said that these considerations as to the designs for mosaics should be addressed to the painter rather than to the architect. But I contend that the design for a mosaic, whether pictorial or simply decorative, is essentially the business of the architect, and that unless he attends to it, and makes it himself, or causes it to be executed under his own immediate direction, he will never produce a really great architectural monument if mosaic decoration is to be a prominent feature in it. As I have ventured to remind you on a previous occasion, architecture is the noblest of all arts; for, when rightly understood, sculpture and painting become her handmaidens. When they were so, the most beautiful and perfect edifices were produced, whether in Greece or Rome, in Italy or more northern climes. It is the architect who takes this lofty view of his profession, and educates himself to carry it out, who will erect the greatest monuments and earn the highest fame.

Although the chief merit of the mosaic must depend upon the designer of the cartoon, much is left to the skill and judgment of the mosaist who executes it. It is surprising how much effect may be produced by a judicious selection of tesseræ of different sizes for different parts, by the mixture of tints in large masses of one colour, such as a gold ground, so as to avoid monotony of tone, and by the dexterity with which the arrangement of the tesseræ is made to follow leading lines, and the undulations of flesh or drapery. The intervals between the tesseræ must be regulated according to the distance, and can also be made to contribute to the general effect. These things, and the proper selection and matching of the tints, form the duty of the mosaist.

Having thus endeavoured to place before you the nature and capabilities of mosaic, I would invite your attention to the main objects of this paper, which are two—1st, to ascertain whether this mode of decoration can be advantageously introduced into this country, and, 2ndly, if so, whether there be the means of employing it on an adequate scale?

With regard to the first point I have already expressed my opinion on the subject of the decoration of our public monuments, as well as of our churches. Not only am I convinced that pictorial decoration might be introduced into such edifices much more extensively than it has hitherto been, but that it could be so introduced very much to the public advantage, both as regards public enjoyment and public instruction. But, unfortunately, the apparent failure of fresco and other wall-painting has discouraged the public, the architect, and those who have the superintendence of our national monuments. It is a matter for regret that mosaic was not more generally known, and had not been introduced into England, when the decoration of the Houses of Parliament was commenced. I hope that it is not yet too late to introduce it into a building, which is eminently calculated, especially in its halls and passages dimly lighted through stained glass, for this mode of decoration. It was truly a noble idea to make the walls of the palace of the representatives of the nation the record of her history; and we must deplore that it has not been fully carried out, principally owing to the failure of the materials employed. It will be a national loss if the fine wall-pictures of Mr. Maclise should perish—whether we regard them as monuments of the genius of the painter, or as most careful representations, in every detail of costume, and even of portrait, of great events which have occurred almost within his time. Had they been executed in mosaic, we should, no doubt, have missed the skilful touch of the master, but we should have preserved designs worthy of him, and he would have been enabled to employ the years that have been consumed in the actual manual labour required to execute such vast works, in preparing other cartoons for the completion of the decoration of the walls, in two panels alone, of which the battles of Trafalgar and Waterloo are now represented.

The works of some of the principal painters of our time, executed at no small cost to the nation, will perish, in all probability, within a few years; and our only chance of preserving any memorial of them is by reproducing at least a portion of them in mosaic.

Ghirlandajo was not wrong when he declared that mosaic was the only painting for eternity. He

would have been still more right had he been an English fresco painter. I know only one mosaic executed from a design by him—that of the Annunciation over one of the side doors of the Duomo at Florence, which is, I believe, in the most perfect preservation, although it has been exposed for nearly four centuries to the effects of the atmosphere. It contrasts strongly in the brilliancy of its tones with the blackened and discoloured surfaces of the frescoes by the same great master in the churches of S. Maria Novella and the Trinità.

Besides the Houses of Parliament, we have rising up around us, Museums, Picture Galleries, Public Offices, Courts of Law, Town Halls, Railway Stations, and other edifices. Each of such buildings might, like the Houses of Parliament, be made to contribute something towards the instruction of the public, and towards the elevation of the public taste, by appropriate pictorial decoration in mosaic. They have blank spaces, which need to be filled up, and which the architect would, probably, gladly fill up. But he hesitates to do so now with wall-painting, because he cannot satisfy himself that it will resist the effects of our climate, and the smoke and dirt of our principal cities. If a suitable and durable material were at hand, in which such pictorial decoration could be executed at a reasonable cost, he would probably avail himself of it. Judging from the manner in which mosaic in Italy and in the East, when used externally, as well as internally, has defied the ravages of time and weather, we may infer that mosaic, if of good quality, is precisely the material which would suit our climate and atmosphere.

It may be said that the climate of Constantinople and of Venice is less variable and less injurious to mosaic than that of England, but I am not prepared to admit this assumption without considerable qualification. Both those cities are liable to changes of temperature of the most violent and sudden nature, and to extremes of heat and cold which are unknown in this country.

I cannot conceive anything more instructive and interesting to the great mass of the people than pictorial decoration carried out in a comprehensive and intelligent manner in our great public buildings. Millions have yearly to while away some spare minutes in railway stations, town halls, and courts of law. We might make such places, as the Greeks and Romans did their public edifices, a means of teaching and amusing the people, and, at the same time, add much to their beauty and interest, by representing on their walls great national events, or recording important scientific discoveries, which have increased the prosperity and power of the country, or have contributed to our civilization and our intellectual development. Such decoration, too, would furnish an excellent opportunity for developing a really English School of Art.

As a familiar illustration of what I mean, I may mention that I learnt more of the different forms and employment of locomotive engines than I had ever known before, when spending a quarter of an hour, a few weeks ago, at a railway station of a small Italian town, round the principal hall of which was very artistically painted, in lunettes, every variety of engines for railways and the mode of their use.

In our museums and picture galleries, with the exception of the South Kensington Museum, where a most praiseworthy and, on the whole, successful attempt has been made to introduce ornamentation on a large and complete scale, we have hitherto been sadly deficient in rich and appropriate decoration. And yet the value of a work of art, and the impression it is calculated to make, are very much enhanced, as far as the general public are concerned, by the beauty or magnificence of the building which contains it, like a jewel which gains by a rich and appropriate setting. Our National Gallery, for instance, is a disgrace to a great and civilised people. Its floor of common boards, its coarsely papered walls, its undecorated ceilings, its mean internal approach, have unquestionably a tendency to depreciate, in public estimation, the value of the treasures which it contains. Our pictures crowded on the walls of such apartments, look as if they were hung for approaching sale in an auction room. Thousands who

visit the National Gallery, and for whose instruction and elevation its contents are partly intended, leave it without any adequate notion of the worth and beauty of what they have seen, merely because they cannot believe that things of real value can be so poorly cared for. There is something elevating and refining in rich and beautiful ornament, when introduced into a public building, and, depend upon it, the working classes feel the influence of it.

Mosaic decoration is particularly fitted for our churches, on account of the grand and solemn effect which, when employed in large masses, it is calculated to produce. It is especially suited to curved surfaces, such as domes, vaults, and apses, because, when thus applied, it produces an infinite variety of effects of light and shade, especially when gold ground is extensively used. These effects are constantly changing throughout the hours of the day. We may imagine what the dome of St. Paul's would have been had Wren's original idea of covering it with mosaics been carried out. Even the gloom of the dull and murky atmosphere of the City would have been conquered by the bright and luminous enamel, and those who have seen S. Mark's at night can picture to themselves the effect of an evening service at St. Paul's when the golden ground of the overhanging dome would reflect the thousand lights beneath.

In connection with exterior decoration, which has of late years become better understood and valued in this country, I would point out the use of gold mosaic as a ground to bas reliefs, whether figures or ornament, in white marble and other materials. The Byzantines and Venetians were well aware of its worth for this purpose, and of the singular beauty and delicacy of its effect. There are some charming examples in the façade of S. Mark's. Mr. Ruskin thus eloquently describes them:—"The small glazed surface of the golden ground is washed by every shower of rain, but the marble usually darkens into an amber colour in the process of time; and when the whole ornament is cast into shadow, the golden surface being perfectly reflective, refuses the darkness, and shows itself in bright and burnished light beyond the dark traceries of the ornament. When the marble has retained its perfect whiteness, on the other hand, and is seen in sunshine, it is shown as a snowy tracery on a golden ground, and the alternations and intermingling of these two effects form one of the chief enchantments of Byzantine ornamentation."

In the best period of Italian art, the sculptor was well aware of the beautiful effect of sculpture in white marble relieved by a gold ground, and the niches which received the statues on the exterior of the church of Or San Michele at Florence were, for the most part, lined with gold mosaic.

An important consideration in the use of mosaic in England, and especially in London, is the facility with which dirt, and the discoloration produced by smoke and soot, can be removed from its surface, either by simple washing, or by the employment of an acid, without the least detriment to its brilliancy. I understand that recently some of the most ancient mosaics at Ravenna, dating from the fifth century, have been cleaned, and that they are as bright in colour as when first executed.

Let me now, in conclusion, ask your attention for a few minutes, to my second point,—Have we the means of using mosaic for decorative purposes, in this country?

In England we have never had a school of mosaists. The few specimens of ancient mosaics that we possess, such as those in Westminster Abbey, were executed by Italians. An attempt was made, four or five years ago, by Mr. Cole, with his usual zeal for the promotion of applied art in this country, to found a school of workers in mosaic, who were to employ tesseræ of terra cotta, or, as they are technically called, "ceramic tesseræ," instead of enamel, for figures and ornaments. Some very creditable specimens were produced, principally by Messrs. Minton & Co., and Messrs. Simpson & Co., but the attempt does not appear to have been altogether successful. For some purposes these terra cotta or ceramic tesseræ are sufficiently effective, but they lack the richness, brilliancy, and luminous quality of enamel. Certain colours, such as reds and purples, cannot be produced in them, and they can never equal the effect of the gold of the Byzantine mosaics. Moreover, the gold being applied

externally, and not protected by a film of glass, is liable to tarnish and to injury. As regards the durability of ceramic mosaics, I hesitate to give an opinion, after the solemn warning of our President in his opening address of the session, against the indiscriminate use of terra cotta, at least for external decoration. I will only mention this fact, that in repairing the mosaics of S. Mark's it has been found that, whilst the ancient tesseræ in enamel are perfectly preserved, those in terra cotta and other materials (for such were mixed with the enamels) have either perished or have greatly suffered.

But mosaics in enamel have been executed with considerable success by several eminent firms in this country. I may particularly mention some of the full-length figures in the principal hall of the Museum of South Kensington, by Messrs. Rust & Co., and by Messrs. Harland, Fisher & Co. Some of the enamels used were, I am informed, produced in England by Messrs. Powell of Whitefriars, but the greater part were, I believe, obtained from abroad,—mostly from St. Petersburg, where, as it is well known, a manufactory of mosaic, which has produced some remarkable works, was founded by the Imperial Government, under the direction of Signor Bonafede, a distinguished Roman mosaist, who is only recently dead.*

In Italy the traditions of the workers in mosaic have been handed down through centuries, and although at times the art has been very low, and indeed was scarcely practised at all, yet it has never altogether died out in the Peninsula. At Monreale certain families of mosaists have been employed from generation to generation in keeping up and repairing the mosaics of the cathedral. In Rome, owing to the demand for elaborate mosaic in the reproduction of pictures, and for furniture and personal ornaments, the skill of the mosaist was almost exclusively directed to those objects, but still the ancient traditions were not lost, and workmen were, without difficulty, found to execute the series of mosaics which adorn the walls of the new Basilica of San Paolo fuori le Mura. At Venice the old secrets were still preserved in the Island of Murano, which had been celebrated as far back as the twelfth and thirteenth centuries for the beauty of its manufactures in glass, and for its enamels. But the sad condition to which the mosaic art had been reduced may be seen by the restorations and renovations which, during the last century and the early part of the present, were executed in S. Mark's.

A few years ago a poor glass-blower of Murano, named Lorenzo Radi, applied himself, with that singular intelligence and perseverance which are not uncommon amongst Italian artists, to the improvement of the manufacture of enamel mosaics, and to the application of some of those secrets which were traditionally preserved in the Island. He particularly turned his attention to the manufacture of gold mosaic. The success which attended his experiments attracted the notice of Dr. Salviati, a lawyer of Venice, and a gentleman of much ability and ingenuity, who perceived the value of his discoveries, and foresaw that they might be applied to the revival of mosaic decoration. He accordingly entered into an arrangement with Radi, and opened an establishment at Venice for mosaic, obtaining artists from Rome to instruct Venetian youths in the art.

In former times, mosaic work, having to be executed on the walls, required considerable time and labour, and was consequently very expensive. The mosaist had to copy the cartoon on the wall itself, fixing the tesseræ, one by one, in the cement prepared to receive them. Dr. Salviati succeeded in avoiding the necessity of working on the spot by an ingenious process, which, however, is only applicable to decorative mosaic, and cannot be used when much delicacy of execution, and extreme nicety in the gradation of tints, are required. He taught his workmen to reverse the cartoon, and to place the tesseræ with their proper faces downwards. The tesseræ are fastened, with common paste, to sheets of

* I have been informed by Messrs. Rust & Co. that this statement is not quite accurate, and that they have succeeded in producing all the enamel mosaic used by them in the works which they have executed, and that they have supplied more or less material to other artists, who have exhibited mosaics at South Kensington.

coarse brown paper, on which the cartoon is traced. When the work is finished, it has only to be fixed with cement upon the wall destined to receive it, and the brown paper is then removed from the face of it. This process requires considerable skill and practice, especially when figures have to be executed, but is perfectly successful. Thus the decoration of any number of square feet of surface can be forwarded from Venice to any part of the world—to America or to India—with safety, and at little cost. Having thus found the means of executing mosaics in the establishment at Venice, and having trained a number of young Venetians to the art, and much improved the quality of his enamels, he endeavoured to introduce this mode of decoration into foreign countries. It was chiefly in England that he met with success. The increased feeling for colour and decoration, and the gradual improvement in the public taste which had taken place in this country, chiefly through the enlightened influence of the Prince Consort, were very favourable to his attempt. It was principally through the knowledge of art, and the well-known taste of the Queen, that Dr. Salviati obtained his first important commissions,—the decoration of Wolsey Chapel at Windsor, and that of the Albert Memorial in Hyde Park. The mosaics of the latter monument are now complete, and cover above 1100 square feet. In the Wolsey Chapel very little remains to be done. The general designs for the introduction of mosaic decoration on both these monuments were by our distinguished Fellow, Mr. Gilbert Scott, and were carried out under his directions from the cartoons of Mr. Clayton, of the firm of Clayton and Bell.

The Albert Memorial and Wolsey Chapel furnish excellent examples of mosaic used both for external and internal decoration. On the Albert Memorial, mosaics adorn a pediment and two spandrils on each face, and the vaulting above the statue of the Prince. The four pediments are occupied by allegorical female figures on a gold ground, representing Poetry, Architecture, Sculpture and Painting. Beneath each pediment, on two spandrils, are figures, also on a gold ground, illustrating the application of the art typified in the figure above. The vaulting is blue, set with gold stars, and adorned with emblazoned coats of arms. The general effect of the mosaics, as far as one can judge in the present unfinished state of the monument, is rich and harmonious. Mr. Clayton has designed his cartoons with a thorough knowledge of the capabilities of mosaic, and of the requirements of architectural decoration. The figures are distinctly and clearly defined on the gold ground, and can consequently be seen from a considerable distance. Except on the Cathedral of Orvieto, there is, I believe, no similar instance of the employment of mosaic on so large a scale for exterior decoration. The mosaics of the Albert Memorial, exposed to the full influence of our climate and atmosphere, and facing the four quarters of the heavens, will furnish the best test of the durability of the material when used in this country on the exterior of monuments.

If I am not much mistaken, the Wolsey Chapel, when completed, will be one of the most gorgeous and perfect specimens of modern decoration in Europe. The intervals between the ribs of the groined roof, including an area of about 2,100 superficial feet, are adorned with angels, heraldic devices and various ornaments in mosaic on a gold ground; the soffits of the twelve side windows are similarly ornamented, and the twenty-eight panels of the great blank west window are occupied by full-length figures of historic persons, who have been connected with the erection and decoration of Windsor Castle, also in mosaic, on a gold ground. The windows are filled with the richest stained glass.* The walls of the chapel are panelled with a series of Scripture subjects, in marble tarsia, each framed in bands of ornament formed by white marble reliefs, inlaid in marbles of various colours, the whole executed by the Baron de Triqueti. The tarsia of coloured marbles, with engraved outlines and shading filled with mastic, is a revival and improvement by the Baron de Triqueti, of an art practised during the Italian cinque-cento, and carried to its highest perfection at that time in the pavement of the Duomo of Sienna.

* By Messrs. Clayton and Bell.

Above each panel are introduced medallion busts of the Queen and Members of the Royal Family, by Miss Durant, a pupil of the Baron de Triqueti.

As the decoration of the chapel is not yet finished, the time is perhaps not come to pronounce a final opinion upon it. But I cannot refrain from saying how much impressed I have been with the refined beauty, and at the same time with the exceeding richness, of the general effect. I especially rejoice to see an example of interior decoration thoroughly carried out, and I cannot but believe that it will lead to still greater works of the same nature.

Besides the decoration of the monument which I have described, Dr. Salviati has obtained other commissions for public buildings in England. In the Museum of South Kensington he has executed several full-length figures of celebrated painters, sculptors and other artists, after cartoons by some of our most eminent painters. I may particularly mention the figures of Nicola Pisano, by Mr. Leighton, and of Appelles, by Mr. Poynter. In Westminster Abbey, the Last Supper over the communion table is by him, after a design by Mr. Clayton. It is a very fine specimen of the art, but the figures are somewhat too small to produce their full effect in a building of such vast proportions. For St. Paul's, he has executed the mosaics of two pendentives of the dome, one from a cartoon by Mr. Watts, the other from a cartoon by Mr. Stevens, and he has a contract for the decoration of the remaining pendentives. I trust that the day may come when the whole of the dome may be similarly decorated, as the dome of St. Peter's at Rome is. The architect of that noble edifice, Mr. Penrose, has not, I hope, relinquished the idea of carrying out Sir Christopher Wren's original design. The late Dean, Dr. Milman, was exceedingly earnest in his desire, that this great work should be accomplished, and its completion would be a worthy memorial of this distinguished man. But, as in many such undertakings, the difficulty in the way, is the want of money. It may seem somewhat a strange circumstance, when it is remembered that St. Paul's is the Metropolitan church of the wealthiest city in the world. If Venice, rich and enterprising as she undoubtedly was in her golden days, could build and adorn the church of S. Mark, as a monument of her glory and her piety for all time, cannot London, whose riches and enterprise so infinitely exceed those of Venice, and whose piety, we may hope, is not less, even finish the Church of St. Paul's ?

In addition to these great commissions, Dr. Salviati has executed several reredos in mosaic for churches in England, into which they have been introduced with excellent effect.

Abroad, the principal commission obtained by Dr. Salviati is that for the complete restoration of the mosaics on the walls and in the pavement of S. Mark's at Venice, for which a contract has been entered into extending over fifteen years. In some parts, especially in the vaulting of the nave, in which the Apocalypse was represented, the mosaic has fallen away, and must be replaced. This is owing entirely to the cracking of the walls, in consequence of considerable subsidence in the foundations, which has necessitated large works of restoration in the building. The mosaics that have suffered are the most modern, not the most ancient, which, for the most part, are still in excellent condition. Many of the cartoons of such as have perished are still preserved, and I trust that the restorations will be executed with every care; indeed, with such reverential feeling, that this grand and unique monument may in no wise lose its original character.

In order to sustain an industry of so much interest, and of so much importance to Venice, a few English gentlemen have provided the necessary capital, which, owing to the condition of the city, was wanting; and Dr. Salviati's establishment has become that of an English Company, under his artistic direction. At the same time means have been found to promote another most ancient and beautiful art, which, in the middle ages, contributed to the glory and greatness of Venice,—that of the manufacture of blown table-glass, the revival of which in Murano, its early seat, is also due to the energy and ability of Dr. Salviati.

From what I have said, there cannot, I think, be a doubt that mosaic, both for pictorial and simply decorative purposes, not only can be, but ought to be, employed in this country. I have shown that when protected from the effects of the atmosphere in the interior of buildings, its durability cannot certainly be questioned. With regard to exterior use it may yet have to be tested, although I see no reason why it should not be proof against our climate, if proper precautions are taken in fixing it. These precautions consist mainly in the selection of the cement which binds the tesseræ together, and fixes the mosaic to the wall. That used by Dr. Salviati has been subjected, I believe, to adequate tests by Mr. Gilbert Scott and other eminent architects, who have employed mosaic, and has been found of excellent quality. The architects of S. Mark's appear, at one time, to have used, as an additional precaution in fixing mosaics, especially on walls and ceilings, large nails with heads in the form of a star, and, as it were, split at the end, in which a wedge was inserted, which opened up the nail as it was driven into the wall. But such precautions appear to be scarcely necessary when perforated bricks are employed for the reception of mosaic, and they do not appear to have been used by the most eminent mosaists.

There is still another point of a practical nature upon which the architect, and the public also, will naturally require some information,—I refer to the question of cost. Upon this subject Mr. Digby Wyatt made some statements in his paper; but, since then, owing to the greater facility of execution, and of producing certain enamels, the scale of prices has somewhat altered. The cost of mosaic depends principally upon the following considerations—the quality of the work, the distance from the eye at which it is to be placed, the predominance of figures, ornament or simple ground, and the prevalence of certain tints.

On the walls and on the table are various specimens of Venetian mosaic, which will afford some idea of the relative quality of work used for architectural decoration. I do not, of course, include the fine Roman mosaic. The most elaborate works executed for decoration in England are the figures in the South Kensington Museum. It would be difficult to find finer specimens of this branch of the art. But they are, of course, the most expensive—requiring very skilful artists, who receive high pay. I doubt whether mosaic of this nature can ever be introduced very largely for purely decorative purposes. The great monuments of Italy and of the East contain no work so elaborate and highly finished.

The pictorial mosaics of the Albert Memorial and of the Wolsey Chapel are purely decorative, and are meant to be seen from a distance. In order to be effective they are not too fine in the workmanship, or too elaborate in the gradation of tints. These figures are good examples of what mosaics for internal decoration should be; but they are more elaborate in execution and in gradation of colour than most of the decorative mosaics of the early Italian and Byzantine churches, although there are specimens in S. Mark's, as in the semi-dome over the exterior northern entrance, in the Mascoli Chapel, and in the sacristy, which exceed them in fineness of work, and the smallness and exact fitting of the tesseræ.

The figure of Christ in the act of blessing, from a cartoon by my friend, Mr. Gambier Parry, an eminent amateur artist, is a good example of two qualities of work united; the head having been executed by a skilled artist, according to the usual process, that is to say, not on the reverse, the drapery by less skilled hands on the reverse.

Still coarser work even than any specimen exhibited here, is well suited for simple architectural decoration, and even for figures; producing an excellent effect when far removed from the eye—a better effect, indeed, than more finely executed mosaic.

Of course figures require, under all circumstances, more careful execution, and more skilful workmen than mere ornament.

As regards the relative cost of tints, the reds and purples are the most expensive, on account

of the materials used in them, and of the difficulty of producing them. The gold mosaic, and especially the silver, which is even more difficult to obtain than the gold, is more costly than common tints.

To show the requirements of a mosaic establishment, I may mention, that in order to execute in a satisfactory manner the cartoons which have hitherto been confided to Dr. Salviati, a stock of nearly 1,500 tints has been brought together, for the most part produced in the Company's furnaces at Murano.

I may point out that any quality or tint of gold may be obtained by darkening or lightening the colour of the glass upon which the gold leaf is laid, or by using a film of coloured instead of transparent glass over it. Or the brightness of the gold may be deadened by roughing the surface of the outer film of glass with the wheel. The architect or painter can consequently choose the quality of gold which best suits his work or his taste.

Taking, then, the various qualities of mosaic, which may be fitly used for decorative purposes, the prices would vary from about 30s. the square foot for the coarsest work, to £4, or, at the utmost, £5 for the finest. This includes the fixing, but not, of course, the price of the cartoon.

When these prices are compared with what an artist of eminence, and fully employed, would receive for the execution of a great fresco, or any elaborate mural decoration—in fact, with what the artists engaged on the wall-paintings in the Houses of Parliament have received—they will be found, I think, very moderate. Of course, we must take the cost of the cartoon into consideration; but if even this be added to the cost of the mosaic, supposing the cartoon to be executed by an artist of high reputation, the whole expense of the mosaic would be far less than that needed for the execution of an elaborate fresco by the same artist. It must be borne in mind that all great fresco painters have, before commencing their work on the wall, executed most careful cartoons for it—cartoons, indeed, which would be more than sufficient to guide the skilful mosaist.

As regards simple decoration, when the durability of the material, the facility with which it is cleaned and restored, and the admirable effect that it is calculated to produce, are taken into consideration, the price of mosaic is certainly not an obstacle in the way of its use on a large scale in our great public and even private buildings.

In conclusion, I would venture to express a hope that the subject which I have brought before you this evening is one not unworthy of the attention of English architects; and that by the aid of mosaic we shall see erected public buildings which, in their internal decoration as well as in their exterior architectural features, may be worthy of the wealth and greatness of the country.

Mr. M. Digby Wyatt, Fellow (responding to the Chairman's invitation), said:—The first remark in such a discussion as the one we should hope for this evening, ought obviously to be an echo of the feeling of delight and gratitude we have all I am sure experienced, and would now fain express, to Mr. Layard for the paper with which he has favoured us. Having myself, as it were, trodden a little in his footsteps in the earlier stages of the development of the art of mosaic in this country, I cannot but recognise in Mr. Layard's suggestive remarks a most interesting sequel to the observations I have endeavoured to lay before the Institute upon this subject on other occasions. It is now about twenty years since we began to think of the possibility of using mosaic on a large scale in England; and at that time I ventured to state, in the rooms of this Institute, that I saw no reason whatever why we, in the nineteenth century, should not do all that the ancients had ever done, in geometrical or pictorial mosaic. To me it is therefore a matter of unqualified delight to find that the application of this art is rapidly making progress in this country; and in no way do I think that it could be better stimulated than by such able and intelligent communications as that to which we have

listened with so much pleasure this evening. We must however feel that there is a great deal more yet to be done, and I think the great deal which has yet to be done, rests very much indeed upon the shoulders of the architects. Thus, it seems quite clear that we have plenty of mosaic workers ready to decorate our buildings, and mosaic in plenty fit for our buildings; but the question really is now, whether we have buildings fit for the mosaic and the mosaic workers. In the history of the arts of this country, pictorial mosaic until quite recently presents a total blank to us, and as its process was not comprised among the resources of the designers of English mediæval structures, in order to obtain the effect of richness when they had ample money at command, they spent the bulk of their funds and energies in working stone into elaborate forms. This, in the later panelled state of Gothic architecture, usually left but little space on which mosaic on a large scale could be well executed, or upon which, when executed, it could be well seen. In mediæval structures so designed in connection with such elaborate stone work, there are usually such large masses of stone, more or less wrought, which must either be painted—and thus spoil to a great extent the fine effect of the mason's work—or be left white, so that when mosaic is added it either fails to combine well with the paint, or looks uncomfortable, because its contrast with the large quantity of white stone fails to produce that general harmony of effect which Mr. Layard very properly lays down as essential to the success of mosaic decoration. We must therefore feel that the right use of mosaic in this country has to be much associated with the development of brickwork, which is for us in this smoky atmosphere both a natural, a durable, and an economical material; and I feel that if we make up our minds to design suitable lofty and spacious structures, in which brickwork plays a leading part, and in which we not only make brick arches, but brick vaults as well, we may hope to save money by using a material of reasonable cost; and our so doing may admit of our applying the money thereby saved to elaborate decoration by mosaic. We shall thus not only employ a mode of structure assimilating well with mosaic in general decorative effect, but we shall obtain those curved and hollowed surfaces, without which it is almost impossible to work out some of the most satisfactory effects attainable by the use of mosaic. A very few words will suffice to explain why it is that gold ground, and all glass mosaic, with light-reflecting surface, looks best upon concave grounds. When a mosaic of that kind is placed on a vertical plane surface, and that surface is illuminated by clerestory windows, or the side windows of the nave of a church, or any windows directly opposite to the mosaic, the light so transmitted will be usually reflected to the spectator's eye in one dazzling sheet. It will reflect the glitter only, colour will disappear, and it will show the pattern in a deep neutral tint, as I now see the coloured pattern on that gold ground mosaic which hangs suspended against the wall opposite to me. On a curved surface, on the other hand, the light by which it is illuminated is brought to a focus in one part only, and many different kinds and degrees of illumination are always shown on other portions of the concavity. Large portions remain in shade, lit up by strong reflected lights. On such large surfaces, colours and patterns are always, as it were, legible; and when the sunlight reflected from the pavement of the church beams upwards in sudden and fleeting pencils of light, it never fails to echo as it were from side to side in the luminous vaulting, until the whole seems to glow and almost irradiate. Effects of this sort are amongst the most beautiful which are to be seen in the ever lovely vaults of St. Mark's. It is on these, and other grounds, which time will not permit me to dwell upon, that I think we have much to do yet in making up our minds for the design of structures really appropriate for such decoration as that of mosaic upon any large scale. The architect can never, indeed, evolve the richest harmonies from any system of decoration, unless he predetermines his scheme of decoration, and prepares his structure for its reception. To make a structure irrespective of decoration, and then to expect it to fuse into a perfectly homogeneous result, when decoration is even most skilfully applied to it, subsequently, is to rely upon assimilation by chance proving as successful,

which it can never do, as assimilation by design. With regard to the history of mosaic, there are one or two points which I would glance at in reference to what Mr. Layard has said,—more particularly as I was in hopes that we might have heard something from him, founded upon his invaluable researches in the East, respecting the real origin of gold ground mosaic. We know it existed among the Romans, at least in Imperial times, since we have the instance of the beautiful column found at Pompeii, and now in the Museum of the Studii at Naples, in which much regular gold ground mosaic is used of quite as perfect manufacture as was in use at any subsequent period. Mr. Layard will also, no doubt, remember the elegant "lararia," or recesses for holding "simulacra" of the household gods which occur in many of the houses of Pompeii; and the decoration of several of which (gold-ground mosaic being freely introduced in them) seems to have formed the prototype of the decoration at later periods of the conchas of the early Christian basilicas. Interesting specimens of such Roman mosaics, in which gold ground was used, may be seen, I think (having been left there on loan), at the South Kensington Museum. I am inclined to believe that gold-ground mosaic was much more common amongst the Romans than we now fancy; and I base this belief partly on the brilliant description of the magnificence of such buildings as the golden house of Nero, given by contemporary writers,—partly on the quantity of gold-ground mosaics constantly turning up upon such sites as those of the Baths of Caracalla, Diocletian, &c.,—partly on the change in taste which led the Romans from Grecian to Oriental models in later Imperial times,—and partly on the almost instantaneous development the art assumed on the removal of Constantine to Byzantium. We know that even early in the best ages there existed in Rome at least two classes of coloured decorative design, one of which was based upon the Etruscan and Greek system of using generally reds, blacks, browns, and low-toned colours; and the other, in which gold abounded, and the ornament was executed in the most luminous colours that could be employed. I was in hopes Mr. Layard would have told us that in the East he had met with gold-ground mosaics which might have preceded those of the Romans, and which might have given us a clue to the source—whether Phenicia, Sidon, Egypt, or India or Persia—from which the Romans might have derived the idea of their use. With reference to Latin mosaics to be met with in the north of Europe, of which but very few specimens exist, I may direct the attention of any members of this Institute visiting Cologne to a particularly interesting series of fragments (now laid down anyhow) on the floor of the crypt of the church of Saint Gereon, in that city. These fragments probably formed a portion of a large pavement representing in regular Latin black and white tesselation, the Virtues, and the corresponding Vices. One fragment—a head, with the inscription "FORTI" upon it—was evidently a portion of a representation of Fortitude. I mention this because it has only lately fallen under my observation, and because it forms an important addition to the very limited lists I was previously enabled to give of this very rare class of mosaic. To pass to times present, all his hearers must have felt pleased, not only with the account Mr. Layard has given us of the progress made by Dr. Salviati, but also with the efforts which we know to have been made by other intelligent producers of mosaic in England, to spread the growth of that art in this country. Mr. Rust has been most successful in some of his colours and textures. Mr. Powell has also produced many good specimens; Messrs. Minton, Messrs. Harland and Fisher, Messrs. Maw, Messrs. Simpsons, and others, have made great strides in different directions; and we must all feel that the more of this kind of thing done—the more labourers in the field—the better. It is not one tradesman, nor twenty, who can even now supply the wants of the civilized world in the way of mosaic, and supply and demand are sure to increase concurrently. One delights to recognise the perfect work done at St. Petersburg on a most magnificent scale, and we may be sure that the more mosaic there is executed in the world, the more there will be wanted. The process of vitrification may be applied to form a permanent

polychromatic decoration, to which I would for one moment allude—viz., enamelling upon iron. We see now in all directions large slabs of metal covered with what must be a perfectly durable material. It remains only to apply a little taste and judgment to current productions by that process in order to create a new element of external decoration, which cannot but prove most valuable to the architect of the future, even if it should fail to come to pass for the benefit of the architect of the present. With reference to the value of external mosaic, about the durability of which in this climate I expressed strong fears on a former occasion, the great point we have to take care of is the quality of the cement used in connection with the mosaic. If it is merely a quick-setting open-grained plaster, or cement, with any diliquescent salts, the capillary attraction of the substance will draw moisture from the rain that falls outside on the mosaic, through to the plaster at its back. In that case the frost would soon get in and blow the mosaic from its backing. I would rather suggest the use of some bituminous or even oleaginous substance, which might go into the joints of the mosaic, and so seal up, as it were, the backing. The tesseræ we know to be impervious to moisture. If the joints can be made equally safe, not only will the mosaic be safe, but the wall it covers will also be protected from damp, and the general stability of the structure will run less risk of becoming deteriorated. Time unfortunately, or rather the want of it, will not permit me to express a great deal of the pleasure I feel in looking at this beautiful mosaic by Dr. Salviati, after the design of Mr. Gambier Parry. It is the most harmonious of any specimen I have seen produced in this country as yet, and furnishes another evidence of the assurance we feel of that gentleman's great talent and refined taste. If it is competent for me to do so at the present stage of the discussion, I shall have great pleasure in moving a cordial vote of thanks to Mr. Layard for his very able paper, and with your permission beg now to do so.

Mr. G. E. Street, Fellow, said, I rise to do that which I am sure all present in this room would willingly do, that is, to second the vote of thanks to Mr. Layard. I sympathize with almost everything he has said on the subject of mosaic. I do not quite sympathize with his reasoning as to painting on walls. That is a large question in itself, and I think it quite possible that distemper painting, which even now covers our old church walls in hundreds of cases, may give good results still. With regard to the remark of Mr. Digby Wyatt, that the buildings in the middle ages were conspicuous for the large space of white walls, and also as to the general inapplicability of coloured decoration to buildings in our old English style, I may remark, that not only do old examples refute the statement, but the observations made by Mr. Layard with reference to the admirable effect of the decorations applied to the Wolsey Chapel do the same also. I agree with Mr. Layard that, as far as it is possible for an architect to do so, it would be well for him to know from the beginning when his walls are to be covered with mosaic, and to make all his designs with that view. But this is rarely possible. In St. Mark's we see the results not only of the architect's own work, but of the labours of a succession of artists, working for centuries in the same church; and no doubt a building may be rendered at least as interesting from having the work of different minds devoted to it, as if it is entirely the work of one mind. As to the manufacture of mosaic, as far as I have been able to see it, the work which Dr. Salviati has accomplished is better than any I have seen in England. The only thing I doubt in the examples of his work which are exhibited to-night is, whether the cubes of gold are not larger than those used in similar cases in old mosaics. Some years ago I had the bad luck, or good luck, to be at Torcello at the time they were restoring the church, when a quantity of mosaic was ruthlessly knocked off the walls by the scaffolding. They were wheeling it away among the rubbish, and throwing it into the canal close by, and I saved as much of it as I was able to collect. The other day, looking at it, I found there was not a cube of the whole (which came from the upper part of the walls) more than three-eighths of an inch square. They were irregular, varying from one-fourth to three-eighths of an inch, but none were of larger size than that,

and the cement joints were excessively wide. In making a design for figures, one would do well to remember what Mr. Layard has said upon that subject. What is wanted is excessively clear, decided drawing, as little gradation of tints as possible, and strong lines, rather than the shading and the gradation of tints which we see a tendency to in the specimens exhibited here. So also with the example of mosaic work designed by Mr. Gambier Parry. I do not know what the effect is opposite the picture, but looked at from where I am standing, one hardly realizes that it is mosaic, it is so smooth and gradated in colour, that it has not the peculiar brilliancy of mosaic. In ancient work one sees that the glass cubes are fixed rather roughly to the wall, and set at so many angles that there is much more variety of effect than there can be where the work is very smooth and even on the face. Before I sit down, I may refer to another use of mosaic work which Mr. Layard has mentioned, and which I am very anxious to see extensively adopted. That is, filling in with mosaic behind carving, or as the backgrounds of bas-reliefs. This mode of decoration was adopted in the north-west door of St. Mark's at Venice, and it is hardly possible to exaggerate its beautiful effect. It is, moreover, much more possible to introduce mosaic in this way than in large quantities. For myself, indeed, though I hope to live to see a great deal of mosaic about my buildings in course of time, I am at the same time bound to confess, that all I have been able to do hitherto has been to introduce it in small fragments, and not over the whole interior of a building. But I have always thought I did a good work in introducing it where I could do so, even on this small scale.

Mr. G. AITCHISON, Fellow, said:—I have to thank Mr. Layard, personally, for his interesting paper to-night, and for the subject he has brought forward. It is one in which I have taken a great deal of interest, and on which I have had an opportunity of making a good many observations. It is greatly to be desired that we should have in this country, and particularly in London, some specimen of a building completely decorated with mosaic, and I think it is not beyond our expectation that, in a short time, we may have some portions of the large public buildings, which are now in the hands of distinguished architects, decorated with mosaic in a perfect and complete manner; and in that way present to the public of England a perfect specimen of the most beautiful kind of coloured decoration: and I think it is of the greatest importance that this coloured decoration should be of what has been called Oriental character, viz., on a gold ground. I cannot agree with Mr. Wyatt on the definition of high and low tones. I should call the white and light colours high and the gold ground low-toned; and the low-toned ground will afford the most satisfactory decoration. In the instances abroad, and especially in those at St. Mark's, the effect of the gold ground is not to produce a glittering surface, but almost that of a neutral, greyish green. I have not examined the mosaics high up at St. Mark's; but in many of the churches in Italy I have had that opportunity, and I have found that where the apse, or rather the semi-dome of the apse, has been decorated with mosaic, the effect of the original work was very superior to that which had been restored. This was a source of great astonishment to me, for I could not, from below, make out what was the reason for it. The modern mosaic in the semi-dome had more the appearance of a beaten brazen or copper vessel, whereas the others had not the same unpleasant glitter. Going up to examine this, I found that when the mosaic was executed at a distance from the ground, in ancient work, the mosaic was put in in long slips, lengthwise, one end in the white mortar, and the other left detached, so that there was a space left round each tessera, and this took off the glitter. In the cathedral of Pisa one of the domes of the apse had been recently restored, and the tesseræ were apparently put on as these are, with the whole of the mortar joints flush with the finished surface, and the tesseræ were larger, so that there was constantly a large piece of glittering gold, that gave rather a coarseness to the dome. In the use of mosaic nearer the eye, the ancient workers used the tesseræ in very small

pieces, though roughly cut, some of them apparently merely broken off with a hammer, and the plaster was in many cases of a pink tint, but flush with the tesseræ, so that on the whole there was not more than two-thirds of the subjects covered with mosaic, the remaining one-third consisting of this opaque greyish plaster; but in modern work the pieces were more accurately cut, and the contiguity of the pieces was greater, and the effect greatly worse. I have very little more to say on the subject, except that I think, at the present moment, we have a *large number of distinguished artists*, many of whom would be extremely glad to give a great deal of time, almost gratuitously, to the designing of figure pictures for our large public buildings. I could mention several who, I believe, would readily devote time to such a subject, and who would do it as a work of love, rather than of remuneration. It would be invidious to mention names; but I am certain there are many who would only be too happy to assist architects with their suggestions, and even perhaps with their designs. There is one point about full-coloured decoration, viz., on gold or dark blue ground, which I would mention; white in them is as gold to ordinary grounds—the valuable colour. With full colour in large masses, it is the white which tells. The gold ground is a neutral colour. As in stained glass, so in mosaic. The white is to be used with the most sparing hand. As to the effect of a building wholly covered with mosaic and lit with stained glass, I do not know what the effect might be; but, judging from the effect of stained glass in the St. Chapelle at Paris, I should say it was not quite happy. To make mosaic effective, it is necessary that the parts of the walls below it should be done in coloured marble, or of some material of a rich, and at the same time of a low, tone; and if the quality of colour reflected from the wall was that of a rough material, I think it would damage the effect of the mosaic. We cannot help seeing in St. Mark's that most of the tints are very beautiful, some arising from partially decayed, and some from polished marble,—we may say precious stones. With regard to the suggestion of Mr. Digby Wyatt of using oil, or some bituminous substance, for filling up the joints and rendering them impervious to moisture, I may state that in some of the old work, that has been done. When I was at Cairo, I went to one of the old mosques in the neighbourhood, and I was asked by the man in attendance whether I would have a piece of the mosaic cut down to take away with me. This I declined, when he told me I might as well have it, as there were some Frenchmen who had got permission from the Pasha, and had taken pieces away to convert into a chimney-piece. As there were some pieces cut out, I examined the backing, and I found on the walls there was a thin coating of asphalte, on which the mosaic was put. This mosaic was of the most costly description, all the white being made of mother-of-pearl. I do not know whether mosaic would be effective for outside work if formed into a perfectly flat slab, but there can be no doubt as to the good effect of gold mosaic as a ground to relieve sculpture; for, as Mr. Street says, some of the most exquisite pieces of work I have seen are the vine-leaf bosses, with a gold mosaic ground, over the doors of St. Mark's. I think it might to be used almost generally in this country for such purposes, for the cost of it can hardly be very great. I know that glass covered with gold, and that again covered with glass, was used by the Romans in classic times; fragments of etched portrait medallions I have seen, but I was not aware that gold mosaic was used by them for roof decorations, and that the aurea laquearia, and aurea tecta, might be translated as ceilings of gold mosaic. The only other remark I have to make is as to the size of the tesseræ. I have seen them used of larger sizes than those Mr. Street mentions, where the effect has not been bad; but those I have measured have generally not exceeded one quarter or three-eighths of an inch. The largest I have seen are those used for the decoration of clothes and the nimbus, where they are an inch or two in diameter, generally convex, and put in solely as plaques.

Mr. Digby Wyatt (in explanation) said—I regret I have been misunderstood by Mr. Aitchison.

The low tone I spoke of had reference to that class of colours which, brilliant in themselves, are lowered by the addition of a considerable quantity of black. You may use the most brilliant colours, and using them boldly in small, equally-balanced quantities, you may get great tranquillity of effect, and hence what may appear to be a low general tone; but colours, into the composition of each of which black enters largely are, strictly speaking, "low-toned colours," and should be distinguished from low-toned effects of colour, which may be produced, as I have said, by using brilliant colours only in a particular way, and as, in fact, the Persians usually did. The great distinction is, that with low-toned colours it is almost impossible to get brilliant effects of colour, while, by using brilliant colours, you may make your effects of colour brilliant or low-toned at will, if only you know how to do it. Mr. Layard has spoken of the extensive repairs which have been undertaken in S. Mark's, and the assurance we may feel in the restorations being properly carried out. If he has anything to do with the matter, of that we may rest assured; but after all we cannot forget that they have been already a good deal "pulled about" by old restorers. In Vasari's pages an account is given of the part which was taken by Titian, both in making new and restoring old pictures. He alludes to Titian as having been the presiding spirit in procuring good wages for the skilled workmen in mosaic, in making proper cartoons, and in superintending the restoration of almost the whole of the mosaics. He says the repairs extended over a large surface; and on a careful examination of the vaults, the student will, I think, be struck by a certain apparent modernness in some features of the pictures—such, for instance, as a hand too carefully drawn to correspond with the other part of the work, strongly corroborative of Vasari's account of the wholesale character of the ancient restoration. I myself remember shrewdly suspecting that somebody or other had been playing tricks with certain portions of the mosaics in S. Mark's; for I frequently noticed, in the same picture, anomalies for which the only explanation could be some such tampering with antiquity described by Vasari. With reference to the bad effect of too smooth a surface of gold on a large scale, we remember what a capital illustration of that is afforded in the Hof Capelle of Munich, and also in the basilica of S. Boniface in the same city, where leaf gold has been laid on in large sheets, from which the spectator gets all the effects of a burnished shield. On the other hand, by the old process of drawing on a flat plastered surface, from which only just enough at a time was cut to receive a single piece of mosaic, and, after the fixing of which, another small piece of plaster was cut away to put in another piece of mosaic, it is obviously impossible to bring pieces of glass so separately inserted into an absolutely true plane. In a large space of vaulting or wall, then, so covered, you have mosaics separately laid at thousands of angles, differing, some widely, others microscopically, but all reflecting light at different degrees. This it was, and happily still is, which gave and gives such endless sparkle and semi-transparency of tint to the best old mosaics, and entirely did away with that copper cauldron-like effect in much modern gold groundwork to which Mr. Aitchison has alluded.

Professor T. HAYTER LEWIS, Fellow, said—At this late period of the evening I will only very briefly advert to one or two points concerning Mr. Layard's excellent paper. During the time I was sketching at S. Mark's, the mosaics were being repaired, the old tesseræ were thrown into the street, and I collected all that I could, and put them into this frame (referring to specimens exhibited), together with some of those with which the work was being repaired, in order to compare the ancient with the modern. Certainly the size of the old tessera in this particular case was generally much smaller than those used in the restoration. To show the enormous improvement we owe to Dr. Salviati, you have only to look at the latter specimens and those with which the ancient mosaics were restored. They are fully an inch square, and of a greenish tint, contrasting most unfavourably with the deep rich yellow hue of the old, the largest of which are not more than half an inch square.

Dr. Salviati has also, I understand, succeeded in reproducing the silver mosaics—a most difficult process. We must not, I think, forget our debt of gratitude to Mr. Powell for the great exertions he has used in reproducing, and with very great success, the manufacture of glass tesseræ. In respect of the art character of mosaics, I think we must all agree that it is necessary to have a broad style of drawing—that even a shadow put in is often almost too much—that instead of shadows you want lines to produce clear, distinct effects at a distance. In the very best of the sixteenth-century mosaics of S. Mark's, one feels the want of that; and even the mosaics of Titian, however beautiful in design, have not the fine general effect which the simple outlines of the earlier produce. The figures not being separated as the older are by the deep gold background, the large masses of colour and shadow produce a very heavy effect. I have no doubt whatever that the treatment by the ancient artists from the fifth to the thirteenth century was the only one which we should adopt in our modern works. I have been asked to bring with me this evening a selection from my sketches of St. Mark's. That of the ceiling of the sacristy is, so far as I can remember, the only specimen of cinque-cento work which will bear comparison in point of design with the ancient. It is a very large arched ceiling, with half length figures arranged in circular panels. The main part is composed of solid gold tesseræ. The outlines of the circular panels are marked out with strongly coloured borders, and the spandrils are filled with very beautiful pieces of ornament; the same broad effect is thus produced which we see in the very early works. I beg cordially to endorse the vote of thanks to Mr. Layard for his paper.

Mr. JOHN P. SEDDON (Hon. Sec.) said—We have had some definite and useful information as to the size of the tesseræ used in those mosaics, and I should like to ask for some equally definite information with regard to the joints. We have been told by Mr. Aitchison, that they were in the old work irregular. I believe that is the fact. It is a long time since I was in Venice, and I cannot speak as to these details. I should like, therefore, to be told the size of the joints, as compared with the mosaic. With regard to the colour, it seems to be far more regular in modern than in ancient work. When we see the gold tesseræ put in so close together, and almost of the same character throughout, one almost wonders that it should have been broken up into bits at all. The same error pervades our modern imitation of the thirteenth century stained glass, and is one cause of its comparative inferiority.

Mr. LAYARD—Mr. Digby Wyatt has stated that the ancients used gold mosaic. I know they used it, but I was not aware that in classic times they were acquainted with the art of enclosing gold-leaf between layers of glass. The Byzantine gold mosaic consisted of gold-leaf pressed on glass, and then covered by a film of glass which was placed over it in a liquid state of heat. The process requires very delicate manipulation, and my impression was, that it was a comparatively modern invention, and not known in classic times. As regards the question of the colour of the gold in modern mosaic, I have stated that it depends a great deal upon the taste of the architect, or of the designer of the cartoon. You may have gold at any tint you like by varying the colour of the glass on which the gold is placed, or by tinting the upper film of glass. It is for the designer of the cartoon, or the architect to determine the colour of the gold to be used for the ground. I agree with the observations which have been made, as to the monotony which is apt to prevail when large masses of one colour are introduced into a mosaic. A skilful worker in mosaics will mingle tesseræ of different tints, both in gold ground, and in masses of colour, so as to prevent this monotony of tone. With regard to the size of the tesseræ in the mosaic, they vary very much it St. Mark's. Some are very small, especially in the mosaic over the north-west exterior entrance. In the chapel of the Mascoli, they are larger. In some parts of the church, they are as large as those which I have exhibited; but I may state that I never saw tesseræ used of the size of those in Professor Lewis's frame, and certainly Dr. Salviati's restorations are not made with tesseræ of that magnitude. I may further mention, that Dr. Salviati has only

commenced restoring the mosaics of St. Mark's within the last six months; before that time, the restoration was undertaken by another hand. The tesseræ used in S. Sophia, appears to have been of a medium size, as will appear by the specimens which I have here, and which were collected by me when the church was restored. In Dr. Salviati's mosaics, tesseræ of different sizes are frequently used, as in the mosaic executed from Mr. Gambier Parry's cartoon, in which a finer kind of mosaic is used for the head, with coarser and larger tesseræ for the drapery. All these matters may be left to the taste of the designer of the cartoon; the artist may point out the size of the tesseræ he requires. A good deal, moreover, depends upon the height at which the mosaic is to be placed, and the effect which it is required to produce. With regard to shewing the cement between the tesseræ, it is not easy to persuade people in this country, that when you see the cement the work is not coarse and ill-executed. Some of Dr. Salviati's work has, I believe, been found fault with because the cement appeared, and it was even suspected that this had been purposely done to economise the tesseræ. Yet there is no doubt that an excellent effect may be produced, especially in mosaics placed at some distance from the eye, by not placing the tesseræ too near each other, and by filling up the interstices between them with cement. I hope when the art becomes better known in England, we shall arrive at some definite results on all these points, which are, after all, of secondary importance, and easily settled. I am afraid from what I hear from Dr. Percy, that we have little hope in regard to wall-painting in London. He has recently, he informs me, made another report upon this subject, in which he declares it to be his opinion, that the coal smoke of London is fatal to all paintings, whether executed in fresco, tempera or water-glass, on wall surfaces. Of course he does not include in this opinion wall-paintings not exposed to smoke, as in country churches. I may remark that in the oldest mosaics of St. Mark's, there are no true reds and purples, those colours being the most difficult to produce.

Mr. Digby Wyatt.—Mr. Cole presented me with some tesseræ which he collected, and they exhibit the same characteristic, the gold being always applied on white glass. The ancient Roman tesseræ have the gold on white glass.

Mr. Layard.—The effect of dark colour on the gold noticed by Mr. Aitchison I have no doubt arises from a greenish film, the result of age. The mosaics of the fifth century at Ravenna, from which this film has been removed, are as bright now as when they were first put up.

Mr. James Fergusson, Fellow, said, I have no personal knowledge of the subject, never having paid any special attention to it, and I am not, therefore, qualified to offer any opinion regarding it which would be worthy of the attention of the Institute; but I most fully agree in what has fallen from the various speakers to-night, with regard to this material affording one of the best opportunities for employing colour in building. With regard to the red enamels, there are in the domes of some of the churches of Constantinople some mosaics dating before the conquest of the city by the Turks, in which the reds are beyond all the other colours in brilliancy. Those of St. Sophia have no reds, or very dull reds; but in the other churches they are all very brilliant. I was not aware it was so rare a thing in that age. I thought those were most brilliant, and I hope Mr. Cole will get copies of them. In the far east, to which my attention has been especially directed, there are, I believe, no glass mosaics of any kind, and I have consequently no knowledge which will justify my speaking on the subject generally. I rejoice that Mr. Layard has brought it before us, and I hope the thing will go further, because I feel that it is the most capable material I know of for coloured decoration.

Mr. G. Gilbert Scott (having taken the Chair in the absence of Mr. C. Barry).—If no gentleman has any other remarks to offer, I will proceed to the grateful task of begging you to express your vote of thanks by acclamation to Mr. Layard. There can, I am sure, be but one opinion here as to the importance of the subject which he has treated, and as to the ability and knowledge

he has brought to bear in what he has laid before us. It is a great pleasure to all that the discussion of it has been so able and interesting. It is most unfortunately the case, so far as my own experience goes, and I believe that of most others, that our modern decorators have not succeeded as we might have expected them to do, in making their work durable. I cannot see why it should be so, except perhaps in London. There one can understand it: but why we should not be able to paint on walls with the same durability as our predecessors did 600 years ago, who gave us paintings which have lasted to the present day in more or less perfection, and which, though whitewashed over, did not receive much harm, and up to the time of the whitewashing experienced no great deterioration, I cannot see. Why cannot our decorators do the same now? They always tell us that they must use oil and turpentine as their vehicle for painting. Our predecessors rarely did so. They tell us, if we paint in distemper it will perish. The old painters painted in size 600 years ago and their pictures have not perished. When we paint in oil and turpentine it fails, from the obvious cause that there is damp in the wall behind, and the oil prevents it drying on the surface. Such is not the case with distemper, and did not operate so, and yet we find that fails also. The fact, however, remaining that we have not succeeded hitherto in our efforts in this direction, it becomes, I think, of the highest importance to find out another material, though, it may be, not largely used in ancient buildings in those northern countries. That our mediæval forefathers did not object, but on the contrary, to mosaic is proved by an instance within a mile of this place. In Westminster Abbey there are, as we all know, considerable remains of ancient Italian mosaic which have stood uninjured to the present day, except where the hands of pickers and stealers have removed it from its place. They used it, just as was done in Italy in similar works, for filling in the spaces, the small spaces in recessed work, shewing up the edges of the marble to form the outline of their patterns. We have lately found that they used it somewhat in different positions, for filling the sunk spaces in monumental slabs on the floor. I do not know whether we have many other specimens in the north of Europe, but I remember one, though I am uncertain whether it is of terra-cotta or of enamel mosaic, in the front of a chapel projecting from the south transept of the Cathedral of Prague, in which a considerable surface in the spandrils is mosaic (a proof, by the way, of its durability when used externally). These are sufficient proofs that the material was valued and thought suitable for buildings by our northern forefathers, at the same time that similar works were going on in Italy. That the work in Westminster Abbey was done on the spot we have two pretty conclusive proofs,—first, that the marble is Purbeck marble, and secondly, in taking up the pavement around the altar we found in the concrete, on which it was laid, numbers of pieces of the glass mosaic,—the *débris* of the mosaic workers thrown into the concrete. Mr. Layard has mentioned two places where I have myself made use of mosaic in England. I hope they will be successful. For the artistic carrying out of my views I have mainly to thank my talented friend Mr. Clayton, who, considering he was doing almost the first work on a large scale in England, has shown great skill in dealing with it. The chapel at Windsor will have no portion of ordinary stone visible. Such as remains after filling in mosaic or marble work will be painted. How far that marble can be made to harmonise with the mosaic I cannot say, but I do not see why it should not, because in St. Mark's we see very large surfaces of marble. I think, perhaps, Baron Triqueti's mode of dealing with the subjects is somewhat too elaborate. I think we ought to keep to the strong, firm and simple line, such as we see in the case of brasses, the shading being expressed by single, though stronger lines, rather than by means resembling engravings: but these subjects are very new and tentative among us, and we must not be hard upon partial failures of a minor class. It has sometimes occurred to me that the free use of gold on incised lines might tend to harmonize this work with the glass mosaic, especially in the foliated inlayings in the framework to the pictures, which is in a character very different from what I had myself intended, and shewn by drawings

With regard to the instance in which I have used glass mosaic for external work, it may have been somewhat venturesome on my part to do so. I think, however, that it will answer. I intended at first to use some of our own hard cements, but Dr. Salviati objected, and he has made use of his usual cement, which is a fine kind of lime, brought from Italy in the form of putty ready made. He mixes this with marble dust, and I think a little pounded tile. There is every appearance of toughness about it. It is not so hard as many of our artificial cements, but it has a great amount of toughness. As to protecting the surface of the joints, I am undetermined at present whether to harden the joints with silicates, or to make use of some oleaginous application. I think common boiled oil is likely to afford a good protection, and I have almost made up my mind to treat the whole with boiled oil in a hot state, carefully wiping it off the surface of the glass; and I hope this will be sufficient to protect the joints both from rain and the damp of the atmosphere. [Mr. DIGBY WYATT.—Taking great care that the plaster is quite dry before it is done.] It is now nearly dry, and will be protected by a covering during the winter. As far as it has gone, I may say there is every appearance of great firmness.

The vote of thanks having been passed by acclamation,

Mr. LAYARD again rose, and said, I am much obliged to you, gentlemen, for the indulgence with which you have listened to this paper. I consider it was boldness on the part of an amateur to read a paper before a professional body better acquainted with the subject than I am. With regard to the Wolsey Chapel at Windsor, I guardedly said the general effect was most harmonious and beautiful; with respect to the details, no doubt there is plenty to criticise, and plenty of people to do it. But when I see a grand work which produces an impression satisfactory to me, I confess my feeling is to judge it as a whole, rather than to criticise the parts. I have no doubt the known good taste of the Chairman will do that which is necessary to put the work in harmony even in the most minute details.

The meeting then adjourned.

Royal Institute of British Architects.

At the Ordinary General Meeting held on Monday, Dec. 14th, 1868, J. CLARKE, F.S.A., Vice-President, in the Chair, the following Paper was read:

NOTES ON THE CELTIC, ROMAN, MOORISH, AND OTHER REMAINS IN ALGERIA.

By Professor T. HAYTER LEWIS, F.S.A., Fellow.

AT the request of your Hon. Secretary, Mr. Seddon, I have put together a few notes, made during a recent and (for various reasons) a hurried visit to Algeria. The time which I could afford allowed me to make but few sketches, and these, in order to be seen during the Lecture, have been enlarged by gentlemen well known in this room—Mr. J. Tavenor Perry, the Messrs. Henman, and Mr. Hanson. But the most careful enlargement, even by the original draughtsman, necessarily involves some play of the imagination, and I have therefore thought it better to produce also my original sketches. They were made, I need scarcely say, without any regard to artistic effect, and have only one merit, viz., that of being, I believe, tolerably faithful studies of the objects represented.

The country which I have to describe comprises the town of Algiers, and the districts round it, most of which are shown on the map. It will save time if I shortly describe them now.

The town of Algiers lies on part of a chain of lofty hills, called the Sahel, or the Boujareah, which rise immediately from the sea, and attain near Algiers to a height of upwards 1300 feet. This range stretches for a considerable distance along the coast, and on the margin of one of the deep ravines which cuts through it some nine miles westward from Algiers, and near the French village of Guyotsville, we encounter the Celtic remains of which I shall have to speak; a little beyond is Sidi Feruch, where the French landed. Beyond here is the village of Bou Ismail, where are the remains of an early Christian church. Near Kolea, a great deal further west, high up on a peak of the same range of the Sahel, we come to the famous Kbour er Roumia, or Tomb of the Christian Lady, of the details of which I shew you drawings—the first, I believe, ever made. Some fourteen miles further still, and low down on the coast, close by the sea, is Tipasa, where the remains of Roman works are very numerous; and still further west, a lofty spur of the Lesser Atlas Mountains divides Tipasa from Cherchel, the ancient Cæsarea, full also of ancient work.

South of the Sahel range lies the long, wide, level plain of the Metidja; some forty to fifty miles long, and varying in width up to fourteen or fifteen miles. It is abundantly fertile, and in most parts well watered, but its colonists have two terrible enemies unknown to ours—fever and earthquake. This plain is bounded on the south by the range of the Lesser Atlas mountains, up to which a railway has been carried by Sir Morton Peto. The end station of this line is the town of Blida (thirty miles from Algiers), celebrated for its lovely groves of orange and lemon-trees; and not long since a characteristically Moorish town. But the late terrible earthquakes destroyed it, as they did most other towns near the Lesser Atlas, and it is now a modern French city. It is for this reason that I shall have to speak but little of the cities of the plain of the Metidja.

To the south of Blida is the celebrated pass of the Chiffa through the Atlas mountains, and thence

there runs a modern road, admirably made and kept up by the French, for 250 miles further, right down to Lar 'Ouat, on the borders of the desert. A long way to the east, in the province of Constantine, is the celebrated tomb (of which I give you some drawings) known as the Medracen, near Batna, and some distance beyond my map to the west, are the three other edifices—also, no doubt, tombs—known as the Djedar.

Algiers itself is best known as a nest of pirates; but years ago Northern Africa was occupied by nobler races. Large fragments of their works remain, and as it is interesting to trace the architecture of the different nations, as wave after wave came and passed away, a slight sketch of its history may be excused, as an introduction to the study of its architecture. The descendants of its earliest inhabitants are supposed to form still a very large portion of its population, and are well known under the name of Kabyles—in early history as Berbers—a nation supposed to have been originally a branch of one of the Semitic nations of Asia. Their language is said to be one quite to itself, containing no Phœnician, Roman, Vandal, or other words of foreign nations, except the Arabs. The modern Kabyles are a fine hardy race, superior to the Arabs in most of the qualities of good citizens. They are hard-working, saving, and temperate, and I can sum up the whole of their qualities by mentioning one simple fact, viz., that the English contractors who made the only railway in Algeria found that the Kabyles earned well their three francs a day; lived on very much less, and carefully saved the rest.

I shall have nothing positive to say as to their architecture, but I venture to call your attention to some few specimens of an art still practised amongst them, and many of which are of singular beauty. They are very peculiar, being worked chiefly on a base of white metal, on which a pattern is raised by thin lines of the same metal, precisely in the manner of Cloisonné enamel, but in such a manner as to shew clearly that it was not intended to fill most of it up. Some portions of it were, however, filled with delicate enamel or corals, chiefly of green and red; and this slight ornamentation was arranged with such skill as to produce an extremely rich yet delicate effect. Specimens of this work were exhibited in the collection of the Algerian Department in the Paris Exhibition of 1866, the best of which have been retained in the present Government Museum at Algiers. Both the forms and colours shew a very high appreciation of art, and it is a curious question as to whence this was derived. A wild mountain tribe such as that of the Kabyles is not likely to have learned it in later times, even were the teachers of it present; and we must suppose that it shews to us the remains of what once was a grand art school, now preserving in its decay simply a traditional record of what it once was. Very much, in fact, as the mosaics and enamels of India tell of the glories of which they dimly only reflect the light. I have one thing more only to mention of these earliest inhabitants of Algiers, viz., their pottery. It is rude in shape and primitive in colour, but offers no mean examples of the potter's art, and no bad specimens of colour (specimen). It is singular that some of the Kabyle pottery was found at the opening of the Kbour, which had been closed since the seventh century; so this kind of pottery is of that early date at least.

Next to the Berbers came the Carthaginians, that grand and mysterious race of Tyre and Sidon, whose works have yet to be disinterred and known, and whose colonists of Carthage met the Romans on equal terms. At some remote date a band of this Phœnician people landed in northern Africa. To those who like precise dates I beg to offer that of B.C. 860 (I am sorry that I cannot give the week and the day), their leader Dido, and the locality, Tunis. But be that as it may, it is pretty certain that, at a very remote period, whilst Nineveh was a flourishing city, and the great Babylon of Nebuchadnezzar unbuilt, the Phœnicians had colonized a large portion of the northern coast of Africa. Some two centuries after (675) came the Greeks. They founded the well-known city of Cyrene, and many another on the coast. But their colonies were far off from the province which I have to describe, and I need not further notice their presence.

Then came the Romans, and with them authentic history. In B.C. 202 they defeated the Carthaginians at the famous battle of Zama, and in B.C. 145 Scipio captured and destroyed their capital. But it was not until long after that they took complete possession of the country, whose native kings were still allowed to reign under the protection of the Romans. The well-known Massanissa ruled in eastern Algeria, and had as his capital Cirta, known as Constantine (since A.D. 313). His kingdom was, in the later Roman times, known as Numidia. He died in B.C. 148, and his successor, Micipsa, embellished Cirta still further with grand architectural works, and it is clearly recorded that for this purpose he called in the aid of Greeks: but whether this meant Greeks of Greece proper, or of Alexandria, I am not quite clear. He died in B.C. 118. Under Augustus (B.C. 25) the western kingdom was held by Juba II., who founded a new capital at Cesarea, which he embellished in the most lavish manner. His death took place in A.D. 19. In A.D. 43 the kingdom became a province of Rome, under the name of Mauritania Cesarea. The province of which Cirta was the capital, retained its name of Numidia. The site of Algiers was then occupied by the small city of Icosium, whose name has, almost by accident, been preserved to us by a few inscriptions.

In 428 came the Vandals under Genseric. Their name and his are so synonymous with all that is destructive, and have been so well borne out by the reality, that I should scarce have mentioned them, had not the Vandal conquest led to the coming of one of the great regenerative nations of mediæval times—the Byzantines. In 533, Justinian's famous general, Belisarius, landed in Africa, and destroyed the power of the Vandals. Their work was done, and they henceforth and for ever disappear. But with their conquerors it was different. Wherever the Byzantine has come his mark has been left; and all over the province something for ever crops up to shew that this half Greek, half Persian, had been there. But their era is to be noted in another way; for from the time of their war with the Vandals is to be dated that era of ruin and desolation, from which northern Africa has never risen. It was reckoned at the time that, in the few dreadful years of the Vandal wars, 3,000,000 of people perished, and large tracts of country, before luxuriant and fertile, lapsed into the desolate masses of thorny bushwood which every traveller in the province recognizes too well. We may well believe this sad story, in remembering that even in a small part only of a country so depopulated, the terrible famine of last year slew, at the lowest estimate, I believe, 300,000 souls. The Byzantine power was shortlived, for, little more than 100 years after their conquest, there came that utterly mysterious event, in whose presence we can but humbly bow and submit, the religion and conquests of Mahomet.

In A.D. 642 the Saracens invaded northern Africa. In thirty years more they had overrun and conquered the whole, and then for nearly 1200 years it was, and has still remained, in the main, Mohammedan, as has been nearly in every other country out of Europe which the Mohammedans ever conquered. But Africa was not, until long after the conquest, all Arab, and it was not until 1050 that the conquerors summoned their countrymen from the deserts of Arabia to people those of Algiers. With them there came, of course, another style of architecture, which has lasted well-nigh to our own day. But it was seriously modified at various times, chiefly under the Turks, who had entire possession of the government from the sixteenth century.

In 1830 the French landed at Sidi-Feruch, and destroyed the government of the Algerine Beys. In 1837 they stormed Constantine, and from that time Algeria has been a half-civilized province of France.

Of the various works of all these different peoples, I take first those usually termed Celtic or Druidic (for want of a better name), and not from any decided opinion as to their having been the first in order of time, but because they are the rudest, and know no tradition, bear no mark, molding, or detail of any kind, which may tell us of their authors, or kindred, or date. Of these works vast numbers exist in Algeria, and many of a most curious kind. Of the rudest class, I take those found in abundance near Algiers, on the margins of a deep ravine of the Sahel, near the modern French village

of Guyotsville. Only a few years since they were reckoned by hundreds; but, as in England, so in Algiers, these old monuments were little prized by the men who have just preceded us, and most have been turned into cottages, fences, or walls. But the French government has now awakened to the calls of its *savans*. The old Celtic graves have been declared to be national monuments, and further destruction is, I hope, stayed. Those at Gauyotsville are simple cromlechs, similar to that of Kit Coity House, near Maidstone for instance, and hundreds of others found in nearly every country of the old world. They are formed of large, rude, unworked stones, set up edgeways, so as to make a small chamber, which is covered with one or more large flat stones at top. The sketches shew this better than any explanation could do. That these are sepulchres there can be no doubt, as bones have invariably been found in any newly opened; and it is clear also that these sepulchres were not the results of any one great battle (as has been sometimes surmised), because the skeletons are those of persons of all sexes and all ages. The most common articles found have been flint implements; and I could neither see nor hear of any trace of a tumulus over any one of the cromlechs. There is no mark of a tool on any of the stones which I could see. It has been suggested that they might be the burial-places of an Armorican legion (from Brittany) which is known to have been located in north Africa. But, beyond the fact that it was so located at some period, nothing is known. In fact, I know of no case of any mark or inscription of any kind on any Celtic remains, except in one case in Brittany, of which I give you a drawing; and this inscription still remains unread. We have more curious remains of the early races, whatever they were, in the eastern province, at Djebel Karonba, and these seem quite peculiar to the country. All are circular on plan, with an external diameter of about 20 feet. They have thick external walls of good, large, rough, coarse stone work, and are covered with flat stones in oversailing courses. They may be reckoned by the hundred, and they also bear no mark, no molding, nor possess even a tradition to tell of their authors or date.

I now came to a very great advance indeed.

Twelve miles west of Kolea, on the top of a hill in the Sahel range, rising there 850 feet above the sea-shore, is the famous Kbour-er-Roumia, or tomb of the Christian Lady.

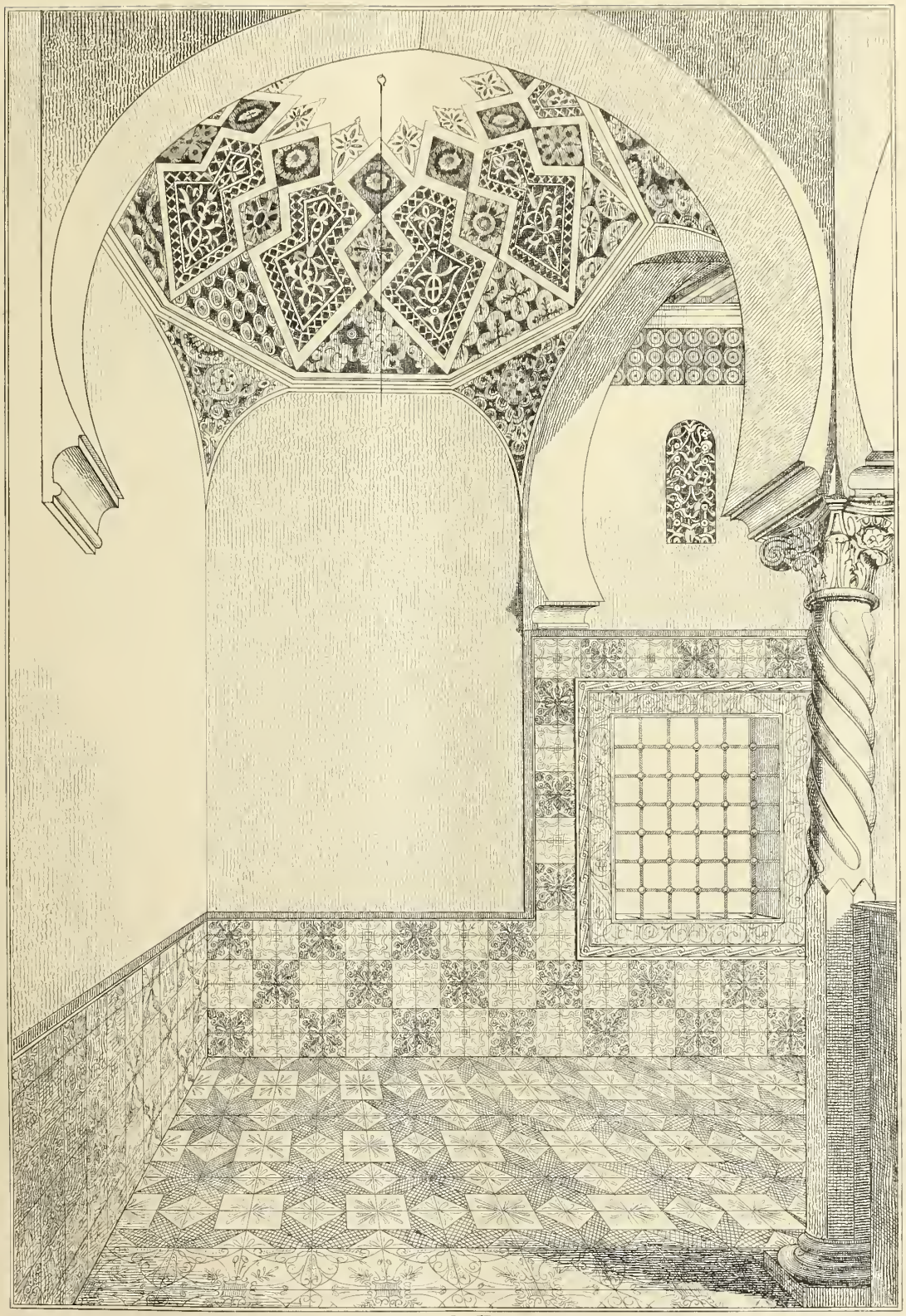
The site is now utterly desolate, but occupies one of the most commanding positions possible, and the tomb can be seen for an immense distance along the plain, or from the sea, standing boldly out above the range of the Sahel, as a great conical tumulus.

Up to the time of the present Emperor's visit to Algeria, it was an utterly confused mass of stones, the lower part having been buried by the ruin of the upper. But he provided the requisite funds, and, in 1865, the work was begun. A portion of the lower part has been cleared and exposed, under the direction of Messrs. Berbrugger and MacCarthy. The clearance occupied eight months.

The plan which I give you is copied from one made by them during the excavations, but, curiously enough, no drawings seem to have been made of the details. The monument is 200 feet diameter, placed on a platform 210 feet square, and on this is a circular range of engaged columns, projecting rather more than $\frac{3}{4}$ diameter. They rest on very bold mouldings, which, with their bases, remain pretty perfect. The bases are the well known attic, and above them the shafts are continued for about 16 or 17 ft. high. Thence the exterior of the monument has been destroyed, and no capital or portion of an entablature remains in situ. But at about the height at which we might expect to find the blocking course above the cornice, a series of gradini commences, ending with a level platform 38 ft. diameter. Whether the monument was continued higher or not there is nothing to show; but, even as it is, the height from the base to this level platform is 108·3. The whole of the courses of stones throughout are of nearly the same height, averaging about 1 ft. 8 in., somewhat that of the cubit, and this height is just that of the continued base mouldings, and also of the bases to the columns.

At the four cardinal points are four doorways, the doors being panelled and having bold architrave

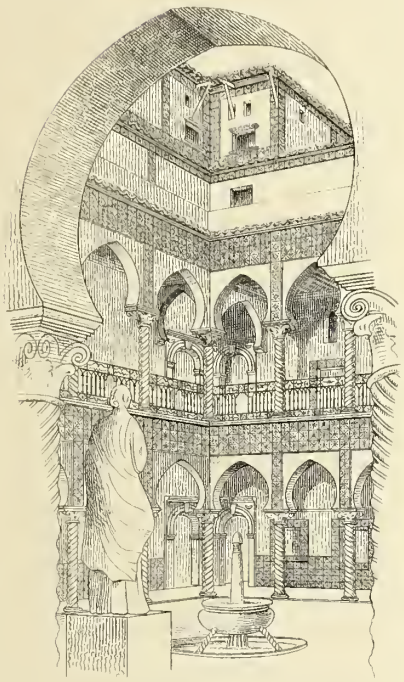
ALGIERS



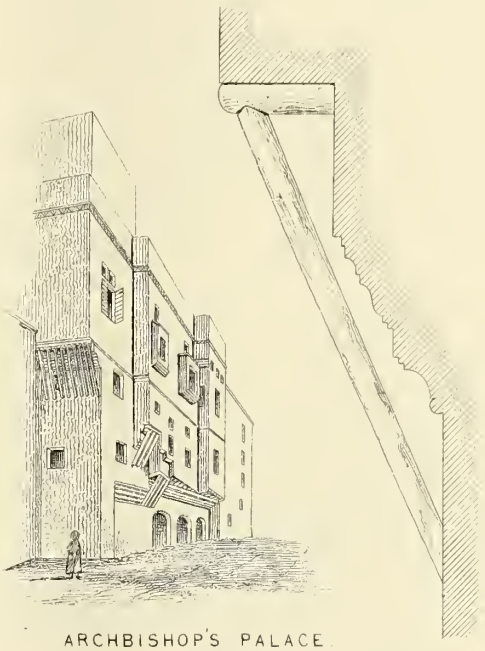
Lithographed for the R.I.B.A. by Kell Bros Castle St Holborn.

ARCHBISHOP'S PALACE

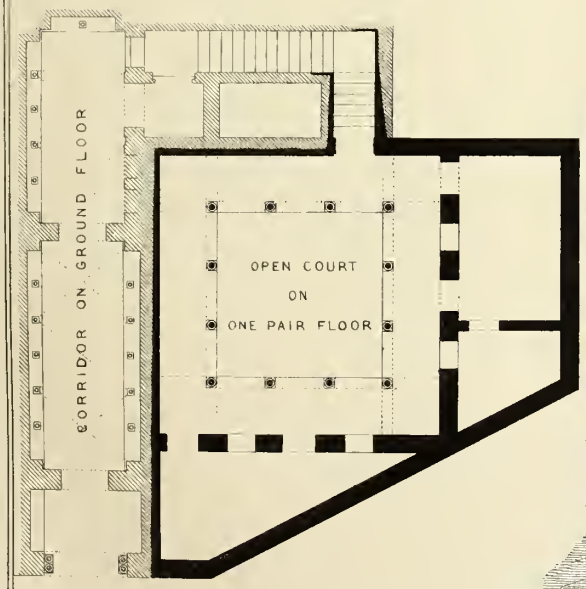
ALGIERS.

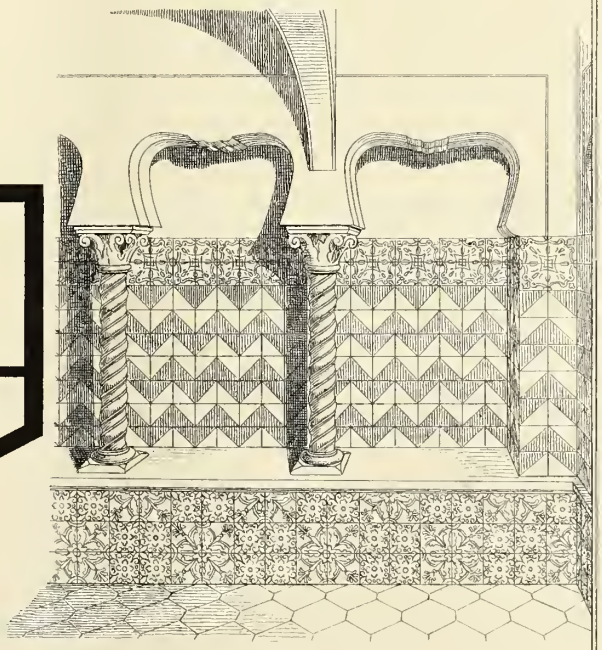


MUSEUM.



ARCHBISHOP'S PALACE.

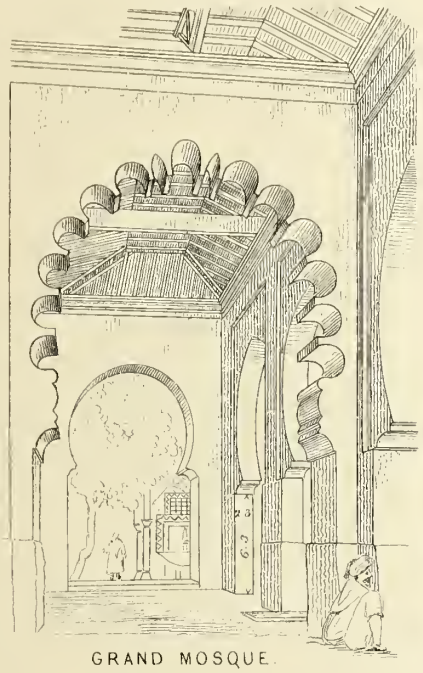




PLAN AND ARCADING IN CORRIDOR OF A PRIVATE HOUSE.

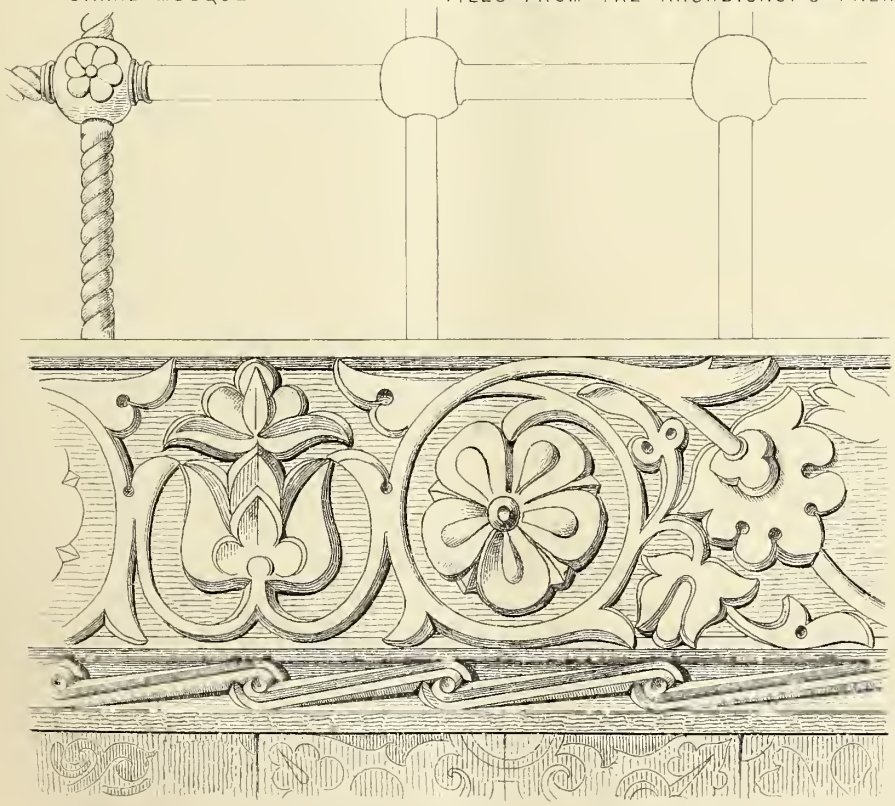
Lithographed for the R.I.B.A. by Kell Bros. Castle St. Holborn.

ALGIERS.



GRAND MOSQUE.

TILES FROM THE ARCHBISHOP'S PALACE, etc.



ARCHITRAVE FROM THE ARCHBISHOP'S PALACE.

Lithographed for the R.I.B.A. by Kell Bros. Castle St. Holborn.

mouldings. All these doorways are false, the doors themselves being each formed of one enormous stone about 15 ft. high, 6 ft. broad, and 14 in. thick, backed up by solid masonry. All the upper part of these doorways is broken away.

The shafts diminish as they rise, and, although none of their capitals remain in situ, many are to be found on and about the platforms. They are Ionic, coarsely though boldly worked, and all have the flat level face to the volutes, which is generally found in Greek work, and all have, likewise, a band all round, under the volutes, enriched with roses, very boldly cut.

Generally, too, the line of moulding runs straight through from volute to volute, and then the capital is formed in the very peculiar way shewn. But a few of the capitals have the graceful fall or hem in place of the straight line, and this, combined with the enriched band, forming a necking seldom found in Greek work, reminds one strongly of the beautiful capital of the Erectheum. These capitals are supposed to have been on each side of the four doorways. They have another especially Greek detail in the honeysuckle, or, as the French call it, the Palmette. But a closer view shews that it is the general idea only of the Greek which has been taken.

The carving is coarse and untrue, and the delicacy of the Greek original is still less faithfully rendered, owing to the stone in which the whole work is carved being very coarse, and utterly unfit for cutting out such details as the Greeks used. I offer you a specimen of the stone, which will shew this at once.* The whole mass of the tomb is so immense as to make it almost certain that it must have been built to enshrine some precious corpse. But effort after effort, on a very grand scale, was made before the secret of its structure was discovered. The French first pierced the masonry right down from the top, and failed. The four doors were soon found to be false, and the real entry was discovered, quite by accident, to be directly under the eastern of these doors. In front of this is a level platform of large stones, tied together by stone dove-tailed cramps. In this platform, close to the door, is a flight of steps. which leads to a square recess blocked up by a massive stone. This proved to be a portcullis, and, after being forced, it admitted the searchers into a small chamber, to the right of which was another recess, also closed by a stone portcullis, over which is the carving of the Lions. I had heard of these long before, and remembering my feelings as I had once gazed on the famous lions over the gate at Mycenæ, was prepared for something equally archaic and picturesque. I confess my disappointment at seeing the little things some 12 inches high, and which one is sorely tempted to confound with dogs. But they *are* lions, and of great interest, too, when one has just got over the first feeling of disappointment. The sketches were made with extreme care, as all sketches of sculpture or mouldings ought to be, and supervised by an intelligent companion, so that I may fairly say, that they accurately represent their little originals. The lion to the right is decorated with, I imagine, a double collar, for the lion of the Atlas has no mane. From the doorway under these lions the gallery winds for some distance, following the contour of the exterior, and then suddenly turns towards the centre. Near the latter the way was abruptly ended by a portcullis. This broken, a chamber 13 ft. 1 in. by 5 ft. was found. Beyond it was another stone portcullis, and then the whole ended in a chamber 13 ft. 1 in. by 9 ft. 10 in., exactly in the centre of the monument. When the French entered these chambers, they were empty—no sarcophagus—no skeleton—no trace of sepulture or shrine. No record on the walls of

---

* On being analysed by Mr. W. Henman, the stone, red earth and Moorish mortar gave the following results:—

	Stone.	Red Earth.	Moorish Mortar.
Carbonate of Lime	86	8	24
Sand and Clay	8	90	74
Soluble Salts and Loss	6	2	2
	100	100	100 per weight.

love or of ambition, and, for all that the monument itself enclosed or witnessed, it might have been built for sport or whim—for the soldier's trophy or the seaman's guide. The stones themselves must tell its purpose, for nothing within or without remains else to do it. A few beads of a coral necklace and some trinkets of Egyptian make were all that the most careful search could find. The floor of the galleries and chambers were bored throughout, but nothing appeared beyond the solid rock, so that if there ever had been a sarcophagus, the chambers must have contained it. But the openings broken in the portcullis are barely large enough to admit a man, and no sarcophagus could ever have been removed through them. We must, therefore, suppose that the chambers had contained the ashes only of the dead, easily removed and now scattered to the winds. The chambers and galleries are all arched with great stones, as shewn in my section, put together with tolerably fine joints. The rest of the structure is filled in with squared masonry also, but of a much ruder kind. This is capitally shewn by a cutting which was made towards the interior, by, I believe, the Turks. And this contrast of fine and rough masonry gives a good lesson in construction.

The lining has its fine joints filled in with liquid plaster, which has evidently been poured in after the stones were set. The backing, on the contrary, has been put together with very wide joints, bedded and filled in with a red argillaceous earth (specimen produced), which acts as a good bed to the stones, and is too tenacious to be squeezed out, even by the enormous weight upon them. This weight has caused to the backing a subsidence in which the fine joints of the lining could not participate; and the result is that its fine large stones have been split into countless pieces. I am sure that not more than three out of every four of the lining stones are sound, the rest having been shivered in all directions, and only prevented from falling by the tremendous weight which, whilst it has destroyed, preserves them in place. The external stonework is being destroyed by, I think, the same cause. But the weight is less, and so the destruction is not so great. Nearly every stone is, nevertheless, fractured more or less, and I must call your attention to the somewhat curious fact that nearly every fracture is at the *top* of the stone. My sketch, which was made with great care, shows this I hope clearly. The stones were cramped together, I learn from Mr. Berbrugger, generally with dovetails of wood, or of lead, or of wood covered with lead. The natives considered these dovetails to be specially provided for their use as bullets, and none were left for me to see. But in the platform several of the slabs are still very securely joined by dovetailed cramps of stone, one of which I have figured.

Now as to the date of this very grand work. The whole of the details give one the idea of their having been copied by Roman artists from Greek originals, and this is I think the opinion of Mr. Berbrugger, who assigns the structure to Juba II. (who died A.D. 19) and to his Queen Cleopatra, daughter of the celebrated Egyptian. This king was a tributary king of the Romans, but a Greek in habits and education and feeling.

Of a similar type to this, but of a somewhat smaller size, is the tomb (still it is thought unrifled) in the Eastern province, near Batna, known as the Medracen, a name of which no probable meaning or derivation has as yet been given. (*Vide* drawings.) The general description of the exterior which I gave of the Kbour will apply to this. Like the latter, it is circular in plan, with a range of 60 attached columns and with 24 gradini above. The whole stands on a square basement. But the details are much more curious and difficult to resolve than those of the Kolea monument. The columns (which diminish rapidly) have no bases, and in place of the Ionic capitals have little more than mere rounded blocks, with a square abacus. Much, in fact, as the rudest beginnings of the Norman cushion capital, before it was cut into facets. It has been suggested that these capitals of the Medracen are very rude copies of the Greek Doric. And above these comes a cornice which is little like Greek or Roman, and as much Egyptian in sections as one could find in Egypt itself (*Vide* large model in Museum of Algiers). The whole is in very much better condition than the Kbour, being in fact but very little injured, except in one place, viz. the entrance. Instead of being at the bottom, as at Kolea, this is at the Medracen, on the fourth step above the cornice (*vide*

drawing). A sliding stone (forming part of the step) gives admission to a narrow staircase, which leads downward, reminding us much of the entry to a pyramid, and very shortly all further progress is stopped, partly by a wall and partly by the *débris* of the part which has fallen in from above. At this place there is no pavement, and it has been surmised that the real entry may be down a pit, much as was usual in Egypt. But this is all conjecture.

The monument is 184 ft. diameter to the projection of the cornice, 16 ft. 5 high to top of cornice, and 60 ft. 6 to top platform from base. The top platform is 39 ft. diameter. Like the Kolea tomb, it stands upon the top of a lofty hill, commanded for a long distance from the plain, and is utterly without inscription, or even tradition, to assign its date, or origin, or purpose. Between the columns, outside, are long ranges of sculpture, too decayed, I am told, to allow of their being assigned to any peculiar style, though their subjects can be well made out. They represent the elephant, hyæna, and other animals, but nothing has as yet been done towards deciphering the meaning of these strange decorations. The Medracen has been assigned by various writers, as may well be imagined, to various purposes and dates. The more probable seem to be that it served as a royal mausoleum for the kings of Numidia, as the Kolea edifice did for those of Mauritania, and the most likely period is that of King Sypha, who was captured and sent to Rome B.C. 203.

Somewhat of the same kind of structure as the above, but of square outline in plan, are the Djedar, a name which signifies a place surrounded by walls, in the south-east of the province of Oran. Their existence was not, I believe, known until 1842. They are three in number, built of large stones, on a square base, with a pyramidal top formed of steps, as in the Madracen and Kbour. The perpendicular part at bottom is 112 ft. square and only 11 ft. high. Above are 12 steps, 11 ft. high in all. All this is of squared large stones. But above the steps is a kind of pyramid, also 11 ft. high, and made of rude stones, as though broken or unfinished. One only of these structures has been opened. The entry was from the south-east, at some distance above the perpendicular part. The entrance thence descends at an inclination of 25 degrees, leading to a gallery which runs round three sides of the building, and has seven branches leading out of it, apparently for burials. The ordinary height of the galleries is only about 3 ft. 4, and they are ceiled with large flat stones. The dates of these works (which I know only from the descriptions of the local antiquaries) are also unknown. The Arab historians state that the Djedar were found, during an expedition, by the Calif El Mausour, who saw, on a stone in front of one of the edifices, the following inscription:—"I am Soliman, the Serdegos (στρατηγος). The inhabitants of this town having revolted, the King sent me against them. God assisted me to conquer them." Some fragments of such an inscription seem to have been found since, so that the story appears to be authentic. Now, Soliman was the Byzantine general who succeeded Belisarius. But the form of the monument resembles nothing that we have of Byzantine work, and all French archæologists, I believe, assign these monuments to a date very much more ancient.

The above are the only remains of Roman or earlier art, which seem to me to be so peculiar to the province as to require special notice. Were I to begin a description of such remains as were common in Roman times, my task would be well nigh endless. At the site of every large town, Roman remains exist to an extent which is scarcely credible. The whole coast, wild and desolate as it now is, seems strewn with their ruins; and, as you pass through the thick brushwood of the dwarf palm, evergreen oak, arbutus and thorn, you see above it, here and there, large masses of squared masonry, which mark the site of some long destroyed villa or village, never rebuilt, it is likely enough, since the time of the Vandals, and inhabited now by the scorpion, the jackal, or hyæna, or the dreaded wild boar.

Between the time of the Roman and Byzantines there is nothing architectural to remark. But amongst the records of this date in the museum are several of great curiosity. One of these gives, as an epitaph, an account of, I suppose, the earliest pilgrimage recorded, (and which must have been a

long one, as the pilgrim, a woman, speaks of having visited all the cities of the whole earth with naked feet). Another gives the earliest inventory, I suppose ever made, of the sacred vessels and vestments of a Christian church, it having been taken during the persecution in the time of Diocletian.*

The Byzantines have, I regret to say, left but few of their great works, although the marks of their connections with Africa are stamped indelibly in much of the work executed in later times.

At Tipasa are said to be the ruins of a large church, now filled up by the huts of an Arab village; but I was, by an unfortunate accident, prevented seeing them, nor could I meet with any description of them. At Bou Ismail I found the lower part of a building, which appears clearly to be the ruins of a very early church, with some curious features still remaining in a tolerably perfect state. The plan of the building was a parallelogram, about 68 by 43 ft. in clear of the walls. To the west were the remains of an arcade (narthex). The main body of the building is filled up and ploughed over, so that none of the piers can be seen. But, from various indications, I should judge that the floor of the Eastern part was several steps above the general floor level. At the east end is a large crypt, consisting of an apse, with a chamber on each side, now almost perfect, the whole built and vaulted in very good squared masonry. Remains of steps leading to the central crypt still exist, and in the centre of it is a singular excavation (made somewhat in the form of a coffin) in the solid rock, with steps cut in it at one end.

My drawing will show the whole, better than any description can do; but it is more rough than I should have liked, as the sketch and measurements were taken when the evening was fast drawing in, and amidst suggestions made in a very friendly but earnest manner that under each stone that we turned over it was likely enough that we should find a scorpion. We did not do so; but the hint was enough to cause our measuring to be somewhat less accurate than usual.

At Constantine there are the remains of a church said to be those of the original one founded in the time of that emperor. But the ruins are very scanty, and we have no assurance that the church had not been rebuilt over and over again, since its foundation. Some few other plans taken, I think, from Lenoir, are given in Mr. Fergusson's history.

I now come to the Arabs.—Their works, so far as I can personally speak of them, are in the town of Algiers. This was, as I mentioned, the Roman city, little celebrated, of Icosium, ruined in the late wars of the empire, and scarcely known to history again until 987. Its name is found in 1067, as being a small town with only one mosque,—that now existing, and called the Grand Mosque. At the end of the thirteenth century even this small town was in decay. It was not until 1532 that it was even surrounded by walls, and some years still elapsed before any great Government buildings were constructed (1552—6), so that the whole town is really comparatively modern, and its architecture, whatever its style, can date only from about the same period as that of the chief renaissance architects of Italy. It is built on the side of a steep hill, in a wedge-shaped form, starting from the harbour at the foot, and finishing with the Turkish citadel of the Kasba, at a height of 387·0 above the sea.

There is nothing in the Arab part that we could fairly call a street, nor any part through which a carriage of any kind could be driven. The thoroughfares are mere alleys, winding about the side of the hill in paths so tortuous and irregular, that a stranger has but one way of discovering his means of escape from them, viz. by persistently going down hill wherever that may lead; by which means, he must of course, at last find himself at the bottom of it. A more irregular walk it is, I imagine, almost impossible to realize.

---

* The following is a copy of the record which I know only in its French translation,—2 calices d'or, 6 calices d'argent, 6 cuvettes d'argent, 1 casserole d'argent, 7 lampes d'argent, 7 petits candelabras d'airain avec leurs lampes, 11 lampes d'airain avec leurs chainettes. The Roman and other inscriptions in Algeria are very numerous, and, as they are discovered, are generally published in one of the Archæological journals of the province, under the able editorship of Mr. Cherbonneau.

The houses, mosques, and palaces, their domes and minarets, are white. Their roofs are flat, with no gable or slanting covering to mark them, and the windows are few and very small. There is, therefore, scarcely anything to mark from a little distance, one building from another, either in outline or colour, so that the general appearance of the city from the sea, is really that to which it is likened, as a stone quarry. Of all its buildings, one of the most ancient and interesting, is the grand mosque, The Djama Kebir. It stands close to the sea, and is common enough looking outside, being a simple square walled building, with a few small apertures in it for light. A small part of the centre of its sea wall is slightly raised above the rest, marking the place of the sacred niche fronting to Mecca. A lofty minaret alone proclaims to the stranger that this building which it crowns, is one of the great native edifices of Algiers. The plan is the usual one in a series of arcades, surrounding an open court, in which is a pretty fountain, shaded by a mulberry tree. All the arches are of the same height—all the avenues of the same width. There is no grand vault, no transept, nothing, in short, on plan, or section, or elevation—to show that the architect thought of bringing the whole edifice into one grand mass. There is no sculpture or ornamental work, except to the fountain, even to be seen at all. But just outside the door of the mosque, in a small entrance court, is a well designed, though simple building, in which is held the Cadis' Court (*vide* sketch). It is square in plan, and covered with a dome. In front of it, is a little colonnade with marble benches, and overshadowed by the luxurious branches of a Banana tree, the whole forms as picturesque a composition as could well be found; outlines and details being graceful alike. All this is genuine Arabic, as its date would shew, the mosque having been built in 1000, and the minaret in 1322. Close by is another mosque, that of the Fishery, or the new mosque Djaima Djedid. This is markedly different throughout. It has no open court; its fountain is in the mosque itself, as our fonts are, and the whole edifice is designed as one complete building, with high nave, aisles of a lower height, spacious transepts, and a dome boldly carried on pendentives, whose graceful outlines show pleasingly to the eye, even through the horrible daubings of paint with which the French have sought to please their Mahommedan subjects.

The whole edifice is evidently the work of a master-mind, and is well carried out externally (*vide* sketch) where the dome, nave and transepts have their outlines shown in a very marked and pleasing way. Bnt these same outlines are not Saracenic. Their history declares itself to the eye of the architect at once, viz. that they were designed by a Christian architect of Greek extraction, and whose recompense for the work, according to the stories told of him (I believe untruly) could scarcely have been countenanced by our Institute scale of charges, for the accounts, differ merely as to whether he was bowstrung or burnt to death, but agree as to the date, viz. the sixteenth century under the Turks. He seems to have furnished a mere outline of the design, and either to have had no workmen sufficiently skilful to execute the usual Byzantine details, or to have trusted to being able to encrust the walls with the equally usual marbles or mosaics, which, however, in this case has never been done. In these, except to the pulpit, and to the sacred niche, there are no ornaments, no mouldings, not even a capital, a base, a cornice to set off the plain bold outline of the mass. Bnt the pulpit and niche show at once, that if the masters were Greek, the workmen were true Saracens. For the ornamentation is as markedly their work, as the design was his (*vide* drawing), and it would be difficult to find anything more delicate and graceful.

The scrollwork is not, as it appears at first sight to be, all on the same plane; but one parts sinks slightly beneath the other, rendering it almost impossible to obtain a clear rubbing of it. I ought to mention that the four angle cupolas were built at a late period by the Turks, and that my sketch was taken from an upper window of the Hotel, and so overlooked it, being, I believe, almost the only way in which a good view could be obtained. Among these mosques this is unique in design. Most of

them are built much on the same general plan as the old one, but there are none with whose description I need detain you. The houses will, perhaps, bear a little more detailed notice.

In walking through the streets in the Moorish quarters one sees nothing whatever of the interior of the houses; and the narrowness of the streets allows little enough even of the exterior to be seen.

In the Jewish quarters it is different; there the doors of the houses are constantly left open, and in the various other parts of the town so many houses and palaces are now occupied by the French, for public and private purposes of various kinds, that a good idea of the old arrangements can be easily obtained. I have in the drawing attempted to show those of a house of a tolerably large size, it being taken from one the whole details of which I sketched. But the plans, &c., were not taken with any great accuracy, as what I desired was the general ideas and not the particular house. The section and plan, shew the chief features both of the ground and one pair story, the section following the lines of the corridors and staircases up to the arcaded court on the one pair. The exterior is of the plainest kind, absolutely without mouldings, and parts of it are projected wherever convenience may suggest in the most irregular manner possible, with no regard either to picturesque effect, symmetry, or proportion. A striking instance of this is shewn in the sketch of the Archbishop's Palace, whose interior is one of the finest Moorish ones in Algiers. In these exteriors I was thoroughly disappointed; knowing their utter irregularity, I thought to have met with some valuable hints as to how this might be worked into the picturesque, if not the beautiful. But I come back better satisfied than ever with our Pointed Architecture, which combines and forms out of apparently discordant materials, a harmonious whole. With the entrance door begins one's sense that Moorish work is not to be judged of at first sight: taking my sketch as an instance, you enter a long corridor having on each side a wide bench, which serves as a stylobate to a row of white marble columns, carrying arches of a very peculiar shape, but common enough in Algiers. The front of the bench is lined with coloured tiles, and the floor is of white marble hexagons; sometimes of tiles with which the walls at the backs of the columns are also lined. In the plan sketched, the corridor is 12 feet wide in clear of the benches, but in the larger houses it is very much wider, and sometimes the columns are two deep, so that the rich tints of the marble, contrasted with the vivid colouring of the figured tiles, subdued by the deep shadows in the recesses, produce a singularly pleasing effect. In some houses the corridors lead directly to the central court; in others to the staircase, the difference depending to a considerable extent apparently upon the level at which the house is entered; for the hill on which Algiers is built is so steep, that this entrance is a serious matter; generally the main court is approached by a staircase which invariably winds on plan, and has all its sides enclosed, so that absolute privacy is insured. The flights of stairs are arranged one over the other, but the soffites do not slant, as with us, but are horizontal, and follow the raking line by a succession of steps, which have an excellent effect. The treads are about 14 in. wide, and their rises are of tiles, with which the walls are also lined, some 3 to 4 feet high. The soffites have open timbers resting on a small plain cornice. The stairs lead into an open court yard, always square, on plan, and surrounded by colonnades, two stories high. I remember no instance of these columns being more or less numerous in height, though there are often one or more extra stories; these then recede to the range of the walls, leaving an open terrace over the colonnade, into which the windows on the lower stories chiefly look, as very few abut on to the street.

The whole work forms as singular a mixture of styles as is, I suppose, anywhere to be found. The central court with its galleries and enclosed stairs is, to say the least of it, as much Italian as Moorish, though admirably adapted to the requirements of the latter by the narrow outer windows and other details. The central doorway to each gallery, the little windows opening out of the small domes at the ends of the colonnades, the railings to the front, and some minor details, are Saracenic, and, in many cases, of exquisite beauty.

I know nothing more beautifully designed or worked out than, for instance, the small domes shown in my drawing of the Archbishop's palace, or of the beautiful palace of the Governor. Yet all the main doorways to the corridors and staircases throughout are Italian of a very debased kind, no doubt, as the sections of the mouldings show, though obviously copied from a very good example. But the curious part of the case to me is this—that nearly every doorway that I saw throughout the town inside or outside of the houses, no matter where, of what size, was of this same identical pattern, or so near to it as to show that it was copied from the same original. The columns are well nigh as curious. They are nearly always of marble, and the capitals and mouldings very well and boldly carved. None of them, that I could see, were antique, and few were copies of the antique. In the corridors the columns, which are necessarily short, have spiral shafts; so also have many of those to the colonnades. But the chief part of the latter are octagonal, about one-third up and spiral above, as shown in my sketch of the Archbishop's palace. Then there is a peculiar capital, as shown in my sketch of that to the Cadi's court, which is met with all over the town.

The same patterns of tiles, too, are seen everywhere; and these are recorded to have come from Leghorn, and to have been Italian, with one exception, which is said to have been English (though I hope not, as it certainly is the least pretty of the whole). The design of the large windows is equally curious with the other parts, as they are as invariably square as the doors are circular, and almost always have wide architraves with ornamental scroll work of the kind shown in my sketch of the Archbishop's palace.

Now this ornament, and a good deal of that on the capitals of the columns, is carved in the sharp, crisp, effective Byzantine manner, whereas those to the doorways are thoroughly Italian. We fix the probable date of a large part of the town as being the end of the sixteenth century, when the Turks had full possession of it; and I can only imagine that they had, amongst their captives, some master mind as architect.—that he gave the general outlines and sketched out the details of some one building which met the Turks' intense approval, and that the details of the numerous other buildings were worked out from his sketch by Saracenic, or Italian, or Byzantine workmen. But the facts, under this or any theory, are very curious, and such as are seldom met with.

The construction of the houses and mosques is simple enough. They were built chiefly of bricks, very hard, about $4\frac{1}{2}$ inches by $4\frac{1}{2}$ inches by $1\frac{1}{4}$ inches, (specimen produced), and are much better than the bricks now made. When the walls were very thick, each side of them only was of brick and the interior filled in with rubble. The mortar used was the red earth of which I have before spoken, with a large portion of lime (specimen), and the whole was plastered inside and out. The floors and staircases were formed of wooden joists, on which a kind of sound boarding or layer of reeds was laid. On this was a thick layer of the red earth—or concrete, then a flooring of stone, marble, or tiles. In common houses the joists were of round logs only—in the better class they were squared, and the chief beams were moulded. The joists projected through the walls to carry the overhanging parts, and the ends were supported by slanting poles which effectively carried down the thrust to a low level, but without any attempt at ornamental effect. The tiles are of somewhat peculiar make. They are of coarse earthenware of a light tint, which was covered with a very thick white. On this the pattern was painted, and then lined in (all by hand) and the whole glazed over. There is very little attempt at carefully outlining; but the whole pattern and lining are very free and bold.

In respect of modern Algiers, I need say but little; the whole of the buildings on the seaboard of the town are new, and most of them erected from designs by French Government Architects, by our countryman, Sir Morton Peto, to whose zealous officers, Mr. Jackson and Mr. Aikman, I was deeply indebted during my stay, as also to our English chaplain, the Rev. Mr. Ginsberg. The steep shelving shore,

which until lately existed, has been transformed by them into a series of magnificent terraces which rise boldly up from the harbour, and which serve as the roofs of warehouses of great size, the whole forming a combination of grandeur and utility unequalled in effect by that of any commercial town I know. And when upon these terraces you see the old mosques, the banana trees and the palms close by the side of the modern French streets, the whole backed up by the queer Arab town, a picture is presented which the stranger is not likely ever to forget.

I wish that, were it only in gratitude for the great good which the French have done in Algiers, I could say a good word for their architecture. But I really cannot, and those who wish to see good specimens of it need not travel so far. One thing, too, I ought to say in conclusion, for it holds good of all architecture of all countries. Whether the modern Algerian be good or bad, it is clearly French and no other; nor can any one who sees it doubt for one moment that the Frenchman has been there. Now, I am no lover of modern French work, but I think that, in carrying with them to a foreign land the architecture which, good or bad, is now their own, and in erecting works which, whether we like them or not, we can see at once are French, and none other, the Frenchman has gone on the right path, and will leave his mark to succeeding times, as the Turk, the Roman, and the Celt have done before him. But in their grandest and sacred buildings the French have given up this principle. The cathedral, erected on the site of an ancient mosque, and the costly Notre Dame D'Afrique, which overlooks the sea and the town from a most conspicuous eminence, have been built in the likeness, so far as the altered services of religion would allow, of the mosques which they have supplanted. They are not the old Mohammedan mosques altered and adapted to Catholic rites, and so signifying, as they well might, the triumph of the Christian. And whilst they are not Christian in any possible sense of the term as far as architecture is concerned, they are not French, nor European, nor have anything in them or upon them, beyond the chapels, the altars, and an inscription or two, to identify them with their actual country, or date, or religion. I hold that this is wrong altogether, and am glad to say that, in principle, it is quite unlike the French, who have done so much for Algeria. And for what they have done, none I think, ought to be more grateful than our countrymen, who may be secure there of a kindly welcome in a most interesting land. The names only of our Consul, Col. Playfair, and Vice-Consul, Mr. Elmore, will shew that both the scientific traveller and the artist are likely to meet with ready help from the representatives of our own government.

What I have given here is a mere sketch, and I could gladly have enlarged upon many parts of it, more especially the Byzantine, to me one of the most interesting eras of art. But I have already trespassed longer than I had wished to do upon your time.

Mr. James Ferguson, Fellow (responding to the Chairman's invitation), said—I shall have very great pleasure in proposing a vote of thanks to Professor Lewis for his valuable paper. If any fault can be found with it, it is that it contains too much matter and goes over a wider field than it is easy to follow. I am especially grateful to him for the first part of the paper, because that is a subject which I have been wanting to know more about, and I have found it difficult to do so. Strange to say, the French have done almost nothing with regard to these old Celtic monuments, and in Algeria they are more numerous and curious than in any other part of the world. There has been no consecutive or detailed account of them; but that they are tombs there seems to be no question, because, not only have bodies been found, but also Roman coins and relics, which fix their date at a more modern epoch than is generally supposed. In Algeria, also, we have all the three stages—the rude stones with the cromlech in the centre; the circle of carved stones, and then we have the Roman or Etruscan conical tomb. There are other examples to which Professor Lewis has drawn our attention which serve to connect the

whole in a complete series, and there is every reason, I think, to believe they are all of the same date. The same thing occurs in India: we have there the rude stone forms and the polished stone forms, and the domical-buildings, all of the same date; and it is to be remarked that the rude stone buildings continue to be erected at the present day, long after the polished stone circles are in ruins. It is a curious inversion of ordinary experience that the "rude stone" people should have continued to build in their primitive fashion after the "polished stone" people had taught them a better style of building. These Algerian monuments form a new chapter in the history, and I feel personally obliged to my friend for bringing the subject forward, because I hope it will be carried further, and that we shall come to know more about it. With regard to the Tomb of the Christian Virgin, the doors are four-panelled, and there is, consequently, a cross upon them, and from that cross is derived the name of the Tomb of the Christian Virgin. There was a model of it in the late Paris Exhibition, but no account whatever was given of it, and we have had to-night, the first information of what was found, or, rather, what was not found in the chamber. It is a remarkable fact that nothing should have been discovered there. The probability is that the body was not put into a sarcophagus, but merely laid within the chamber. The body, of course, would decay, and nothing would be left, but the fact is interesting, as showing the difference between their mode of sepulture and that of the neighbouring Egyptians. With regard to the other tomb, that of Madresen, the order which surrounds the lower parts appears to me to be almost identical with that of the Tomb of Absalom, in the Valley of Jehosaphat, at Jerusalem. The great point of interest, hitherto, has been to know what is inside these tombs, for this one has not yet been entered, though, as Professor Lewis says, the entrance has been found, but now that the other has been explored, we may safely assume that this also was a sepulchre. The whole, however, forms a history which it would be extremely interesting to see further developed, but to follow it out would require more time than Professor Lewis probably had at his disposal to devote to the subject. On the other matters referred to in the paper I have no special knowledge which would qualify me to speak, but they open out a wide and fruitful field of archæological research, and I hope it will be carried further by those who are qualified to enter into it. It is altogether a subject of great interest, and I am sure every one present must feel greatly obliged to Professor Lewis for having brought it before us in the very able way in which he has done to-night.

Mr. G. G. Scott, Fellow, in seconding the vote of thanks to Professor Lewis, expressed his obligations to that gentleman for the lucid manner in which he had treated a subject of great interest, and one on which few of them had opportunity of knowing anything about.

Mr. M. Digby Wyatt, Fellow, said—I can only echo what preceding speakers have said with respect to the gratitude we owe to Professor Lewis for his labours in illustrating the voluminous aspect of the art-remains of Algeria. Among them there are, however, two classes of antiquities upon which he has scarcely, if at all, touched, and upon which I, at least, am anxiously looking for more and more light. One is the mysterious question of the real character of Phenician design. Any detail which should illustrate the nature of the intercourse and commercial relations existing between the Phenicians and the northern and western nations of Europe would serve to illuminate a very dark page in the history of art. How the connection, which there seems little doubt existed, between England and the North of Africa, at a very remote period, affected early British, Celtic and Anglo-Saxon art and art-industry is a very interesting question—and one of which we can know little unless observers and students, like Mr. Lewis, may in time be enabled to give us some accurate information (based upon the careful study of Punic remains,) as to what Phenician, and especially Carthaginian art, really was. Whether the megalithic remains and tumuli, upon which Mr. Lewis has dwelt, have any and what relationship to similar remains in Britain and in Brittany are questions of import alike to the antiquary, the architect and the anthropologist. All this is at present little else than a sealed book to us. The

second point which specially attracts me, amidst the abundant evidences of the magnificence of their architecture which the Romans have left upon the soil of the Province, now known as Algeria, is the extreme beauty of their mosaic pavements. Among these is particularly noteworthy that of Constantine. Judging from the coloured engravings in the great work of the French Government, this pavement must be of the most beautiful description possible, and the finest, probably, of the kind ever executed. There are in these two subjects alone, ample materials for a second paper upon Algerian remains, and I shall esteem myself happy if this cursory allusion to them should be the means of eliciting further information upon them from our respected friend, Mr. Lewis.

Mr. WYATT PAPWORTH, Fellow, enquired whether Professor Lewis considered the large tomb he had described had been entered and rifled previous to the time at which it was discovered?

Professor LEWIS said there was no doubt but that it had been: also that the entrance was closed after the seventh century, and then lost. That it had previously been broken into was unquestionable. The only way of getting into the central chamber, at the time I was there, was through the broken part of the portcullis, where the hole was barely large enough for a man to get through.

Mr. JOHN P. SEDDON, Hon. Sec., said—I beg to add my thanks to Professor Lewis, who has been good enough to prepare this paper at my own request. I should like to ask two questions,—one is with reference to the sketch of panelled wood-work exhibited. I wish to know how the panels are constructed. As far as I am able to judge they resemble those in use in old cottage doors, which I have met with in Germany, and which consist of one thickness of wood planted on another.

Professor LEWIS explained the construction of the panels by a sketch upon the board. Every piece of the door, referred to, was fixed upon a back ground in the way he had described. Looking to the number of panels an immense amount of labour was involved in the work. He could not say whether the wood-work was glued together, for it was painted with so many thick coats of paint, that it was with difficulty he could make out the joints. There was first an open door framing, then a flat lining, and upon that the panelled work was put on. The panels which he had were the full size, and the smallest were in four pieces. They were probably cut in long lengths and then mitred, but great labour must have been used in the mitreing. It is what the old carpenters called "fortification" panelling, which entirely covers the original framing of the door.

Mr. SEDDON, with regard to the red mortar or earth, mentioned in the paper as having only a small quantity of lime with it, asked whether it had the appearance or consistency of mortar at the present time.

Professor LEWIS replied, that one of the specimens he had brought was from the Kbour, and which he believed contained no lime, and it could hardly be called mortar. But with the Arab work it was different; the brick which he had brought was from an Arab building, and had some mortar attached to it. This was formed of the above red earth, with a good deal of lime with it.

The CHAIRMAN then put the motion of a vote of thanks to Professor Lewis, which was passed by acclamation, when the Meeting was adjourned till the 4th January, 1869.

Royal Institute of British Architects.

At the Ordinary General Meeting, held on Monday, 4th January, 1869, J. EDMESTON, Fellow, in the Chair, the following Papers were read :—

A COMMUNICATION FROM PROF. DONALDSON, PAST PRESIDENT., HON. SEC. F.C.

On the Archipelago, *en route* from Athens to Trieste.
21*st December*, 1868.

MY DEAR NELSON,—I am afraid that our colleagues and yourself will have thought me very negligent, in never having as yet, during my nearly three months' absence, written to you. But the truth is our cruise has been so rapid, that I have not been able to do more than take a superficial glance at any objects, and they have been so numerous and varied as not to leave more than confused images in my mind, with little or no time to mature them. I left home on the 1st of October, and proceeded to Paris, where our party of eight or ten met, and left on the 5th for Italy, passing the Mont Cenis over the Fell railway, which is a great success. With the swiftness of wind and a Titan-like strength, you are whirled along on the very edges of precipices, and turn sharp curves on the brink of destruction; your breath stops, but you are in such a hurry that you have not time to think of danger. We passed through Turin, Bologna, and by Rome, to Naples. Thence we recrossed the Appenines to Brindisi, where we embarked on the Italian boat for Alexandria. There we took the rail for Cairo, and visited the Pyramids, to the top of the greatest of which I scrambled; and we also went to the cemetery of Memphis, and at Saccara dived down into the Serapeion, all of which I described to the Institute after my last voyage thither. Since then another building of some extent, and richly covered with painted hieroglyphics, has been cleared of the sand. It is commonly called a temple, but it has hardly any special hieratic pictures, but rather domestic ones of the every-day uses of society—trades, animals, birds, and such subjects—and I thought it resembled a dwelling rather than a sacred edifice. We took occasion to go down the Suez Canal about half its length, from Ishmaela to Port Said, which is completely executed, with the sea-water in it. The southern portion between Ishmaela and Suez is excavated to half its depth only, and the harbour at the mouth has to be completed. It is a marvellous realization of a prodigious project, and does justice to the daring of its projectors; as you steam along its channel 300 feet wide, with sufficient depth to receive the largest merchant vessel, you cannot but feel impressed with the extent of this great sea channel. But its maintenance will be the greatest difficulty of all; to preserve the depth from being choked up by the sands, whether along the canal itself or in the port, is even now a matter of anxiety and care. While we were on the spot a French vessel of war was expected, and they were employing many gigantic dredgers to secure a channel. In the basin of the harbour there were several vessels of considerable size. The piers to enclose the harbour of Port Said are constructed of enormous concrete blocks, a couple of metres or more in each direction, thrown over and left to take their place "pêle-mêle;" but it has been found that this will not do, for the waves force themselves between the crevices and interstices with such force as to move them, and they are now considering how to produce more cohesion between the blocks than by their mere weight; if they are obliged to adopt the regular combination of the masses by regular construction, as in our Dover pier, it will cause an enormous expense, for the dykes or piers extend out

miles into the Mediterranean. The town, if I may so call it, of Said is composed of rapidly-built stores, one or two storeys high, like all settlements in new colonies, and the inhabitants consist chiefly of Maltese, Greeks, the refuse of the Levant, with very few respectable French. One who held a not very high position in the public service there said it was quite as an exile, without any society.

From Port Said an Alexandrine steamer took us on to Jaffa. These Egyptian coasters are fine vessels, chiefly built in Scotland, but so wretchedly officered and manned that there is great danger in trusting one self on board. Only last evening we heard at Syra that two had run foul of each other off the coast of Asia Minor, between Rhodes and Scio, and one of them had foundered with some 220 souls on board, four only of whom were saved. It was Ramazan, and at night, and they were little occupying themselves with the care of the vessel, but eating and feasting after the day's fast. As we approached Jaffa early in the morning, we could see our white tents on an eminence outside the town sparkling in the sun, all ready prepared to receive us by our dragoman, who had gone on before a few days to make all the necessary arrangements. Jaffa is picturesquely situated on the slope of the rocky hill, and its white houses give but too favourable an idea of the interior, with its narrow lanes—I cannot call them streets—miniature shops, and break-neck pavement. We found our horses ready for our selection, and the cook had prepared a capital meal; in fact, the eating and drinking of such an expedition are only too good, and it would be better for the traveller if they were more simple and less luxurious; a soup, a stewed dish, a roast, with vegetables, occasionally fish, and a plum pudding or other pudding, pie, or sweet dish, are daily served. Much care is requisite in the choice of the animal who is to carry you for some weeks over bad and dangerous roads. I left to others two or three of the most showy, and chose a very good-looking, but firm, solid horse, who served me well. We had only one tumble together, when he was passing over an inclined slab of slippery rock, which was not his fault nor mine; but he fell on the right and not the wrong side, and so we had an easy affair of it, and soon recovered ourselves. After some weeks' companionship, you get quite a regard for your faithful nag and his surefootedness, for he is at the same time spirited, with his Arab blood and *entirety*. The roads through Palestine and Syria are simply detestable, and, with only two exceptions, no care is taken of them. The geological structure of the country is generally of magnesian limestone of a cavernous character; the beds, whether highly or only moderately inclined, present large slippery surface, but the face of the country itself, whether mountain or plain, is as though strewn with large stones, so as to hide the soil, reminding me of the district of Connemara in Ireland.

We reached Jerusalem in a day and a half, but were not able to see its walls till after sunset. The ride was through a hilly, wild country, Kirjeath-Jearim alone presenting a fine old church of the time of the crusades, with pointed arches, and paintings still traceable on the walls, though long since abandoned and unoccupied. There is a nave and aisles, divided by three or four square pillars on each side and apsidal recesses at the east end. Jerusalem itself caused me the greatest disappointment and pain. It is a vast store for religious traffic, occupied by religionists of every shade of Christian doctrine, scrambling and fighting for the pre-eminence, and as to which can offer the most numerous and attractive localities and objects for superstitious reverence. Unsatisfied with the general consciousness of the solemn and stupendous occurrences which have here taken place, each sect seeks to appropriate as specially its own this or that spot as the true site of each sad event. There is a large space covered with olive trees, known as the Garden of Gethsemane; but the Latins and the Greeks have enclosed a special area as the scene of our Saviour's agony. The Holy Sepulchre could never have been where its representation is now located; but Latin and Greek, Armenian and Copt, fight and scramble on the soil, and the Turk, as guardian of the sacred spot (as it is supposed to be), is obliged with bastinadoes to keep the furious superstitious antagonists in order. The portal of the Holy Sepulchre

is a bazaar for the sale of relics, carvings, and other like reliques, and the very nave of the church at Bethlehem has the pavement covered with the curious objects, which some dozen of vendors have to show and tempt the traveller to purchase; and they ask twice or more than the things are worth, haggle and barter with you, and at length take your own reduced estimate of the worth. At Nazareth the Greeks and the Latins have a cave, almost identical in decoration and arrangement, where the worshipper is invited to kneel down, say his prayers, and deposit his offerings, or burn his wax taper, on the presumed site of the Annunciation; and they are in two distant parts of the village. Doubtless the Greek tradition is the more to be relied upon as that of the original inhabitants, but the Latins dispute their priority.

The Holy Land offers every evidence of being an accursed country, as foretold by the prophets. Covered with rocks and stones, with very little soil, scarce of water, and that rarely good, no stable parental government, the villages and towns devoid of all sanitary arrangements, the Jordan the only permanently flowing river. One feels quite unhappy to witness such desolation, and the conviction rests on the mind that, until the Almighty withdraws his wrath from this ill-fated land, no earthly power can raise its people, give its soil abundance, or restore it to be the land flowing with milk and honey which it once was blessed to be.

Having given you an idea of the moral aspect of my subject, and that I fear not a very attractive one, I will pass on to the architectural side, which is very difficult to treat as there are no very distinct features to trace. Jerusalem is, as you know, situate on the rapid slope of hills which rise from the valley of Kedron up to Sion. Its sanitary condition is the worst possible, for it is without sewers, and is supplied from cisterns which receive the surface waters, too often impregnated from cesspools and drains; the streets are narrow, and one-fourth arched over to gain space; with occasionally a malignant air, so that it is not surprising that European residents denounce it as very unhealthy. A great part of the city is occupied by the religious communities, which are numerous. Various new buildings have been erected of late years, as monasteries, churches, nunneries, hospitals, and schools. The ambitious Russians cover several acres outside the Jaffa Gate, upon a rising plateau which commands the city, with a large church not yet completed, residences for the clergy and others,—"*hospices et hospitaux*," in detached masses, surrounded by gardens. There is room to receive all the Christian population, if needs be, within the precinct. The structural part of the new Dome to the Holy Sepulchre is nearly completed, and the interior decorated with paintings, which, however, are of too pale a tone to be effective. The modern building that pleased me most was the Armenian Church, which, although evidently designed by an inferior mind, is effectively decorated in the interior with coloured tiles and fine iconostasis. But no edifice, old or new, equals in effect the Mosque of Omar. Simple in design, and treated in detail with majolica tiles, it has a sombre effect truly impressive, so far does the Turk outdo the Christian. The Holy Sepulchre itself is a most dramatic assemblage of churches, chapels, oratories, and sanctuaries; some on the general level, others going up, several going down into the rocky caverns; and, what with the ceremonies of the various religionists carried on at the same time, their processions and visits to every one of their twenty or thirty altars, their chaunts and tapers and vestments, litanies on one side, chaunts on the other, the mind becomes bewildered, and one wonders whether this can be a true temple for the worship of the living God, or a very Babel or House of Baal for the sacrifices of superstition; the silent, impassive Turk meanwhile keeping order, smoking his pipe, and sipping his coffee.

The Valley of Jehoshaphat is the only spot containing remnants of the classic times, Greco-Roman, but I saw nothing of decorative detail that can be called Jewish. Some enthusiastic minds seem to connect with that period some walls of fine construction, of large blocks of stone between 12 and

20 feet long and 4 or 6 feet high; but what are these to the stupendous courses we see at Baalbec, 60 feet long, and upwards of 12 feet high and 10 or 12 feet thick, of the time of the Antonines? The Wailing Wall of the Jews is a noble specimen of construction, but cannot, I think, be referred to an earlier period than the Herodian epoch. A mistaken technical expression is used by Lieutenant Warren and other non-architectural writers, in describing the blocks of some construction as having *bevelled* edges, whereas they are not bevelled or splayed at all, but have a slightly sunk margin two or three inches wide, sunk $\frac{1}{4}$ or $\frac{3}{8}$ of an inch from the general face. As I was riding with Lieutenant Warren, I observed about little more than half of a pure Greek Doric capital on the ground, reversed, and something like those of the tombs in the Valley of Jehoshaphat. He had not observed it before, so I called his attention to it, and he had it taken to his house. It is about 2 feet diameter, and I took the section, with the dimensions, to ensure accuracy of the profile, and left the sketch with him. He has discovered a new channel some 1,200 feet long, about 5 feet high and 2 feet 6 or 3 feet wide. It has several shafts, with steps leading down to it, about 20 or 30 feet underground; he cannot exactly explain its use, but thinks it served the purpose of a water conduit for the area of the Temple. It appeared to me that the ancients, having traced out the line of the conduit, sunk stairlike shafts, and then worked right and left till they met, and thus were able to have several sets of men at work at one and the same time. We went to Jericho, and bathed in the Jordan and the Dead Sea, and visited Mar Saba and Bethlehem. The last is a charming spot. Jerusalem, where the great crime of the Crucifixion was perpetrated, sits proudly on its hill, but desolation is all around. Bethlehem, where the Saviour was born, lies beautifully on *its* hill, surrounded by groves of olives, oranges, fig-trees and vines, the very embodiment of peace, and inhabited only by Greeks. The church is a large basilica, the transepts and the apse being alone devoted to public worship, and divided off by a lofty screen from the columned nave. Here the iconostasis is of vast size, of ill design, but pretty well carved in profuse ornament in wood, the whole gilt, which gives it a most magnificent and imposing appearance. Here superstition has also been outdone. The Stable is supposed to have been in a series of small, cavernous excavations, approached by a long passage about 2 feet 6 wide, till the Empress Helena, or some other, cut out two more direct accesses from the high altar.

Our main tour through the Holy Land and Syria occupied us three weeks, with a train of thirty horses, mules and donkeys, five tents, and numerous attendants. As I have already said, the country is extremely mountainous; the ground rocky, and covered with pebbles and stones, as though purposely strewed there; the roads difficult, wearying, and dangerous for man and his trusty beast. The length of the country does not exceed 200 miles, by 40 or 50 wide; I mean the Holy Land. Hardly any, if any, traces of Jewish buildings remain, but there are some noble ruins of the times of the Herods and the Romans. Samaria, among others, is a very striking place, situate on the top of a mountain, or rather hill, which rises in the centre of the plain. One of the city gates with a circular tower on each side. You enter, and two lines of shafts of columns (Corinthian) present themselves for a quarter of a mile in length, along the side of the slope of the hill. In various parts you are surrounded by shafts of columns still standing. There is a stadium in the plain, and evidences of a forum. All this Herodian. On the shores of the Lake of Tiberias there are considerable remains of walls of cities and columned buildings, but still uncertain as to which city—whether Capernaum or Chorazin, or any other. But they appear to be of the later period of the Roman empire. At the foot of Hermon, Syria may be supposed to commence; of Dan, the northern city of the Holy Land, only a mound and traces of mural construction remain. But at the very foot of Hermon, on the slope, is the site of Cæsarea Philippi, with its antique city walls, and various constructions and rocky caverns and niches sacred to Pan: Greek inscriptions cut in the face of the rock still legible, with some pains however.

Through the Holy Land, as I have before remarked, springs are very rare, and the land arid. But directly you approach Hermon springs rise up at every step, and the sources of the Jordan gush out, an ample river at once, with a deafening roar, into an impetuous current. Up above the ancient town of Cæsarea Philippi, about two hours off, and perched upon the top of a rocky precipitous spur, is a very grand mediæval castle of the Saracens. Two of our party went up to it, and describe it as of considerable extent, with large courts, keep, towers, and other suitable erections. Two days' ride from this brought us to Damascus, one of the world's paradises of the Turk and Moslem.

You may imagine the way-worn traveller or pilgrim coming from the Arabian Deserts when Damascus, with its glittering spires and minarets, bursts on his view, surrounded by groves and gardens, extending a couple of leagues one way and a couple of miles the other, watered by the abundant stream of the Abana, backed by a fine range of rocky mountains, and snow-capped Hermon rising above all, as a mighty protecting genius. Can we not, then, sympathise with the ecstacy of the wanderer seeing Damascus *ab externo?* Seen within, it yields to Cairo, I think, as to the nobility of its mosques, its fountains and schools; but it is superior in its bazaars, and khans, and street pavement, the last named here of stone, there of mud. Some of the columns that lined the street which was stated in the New Testament to be called Straight, and ran from one end of the city to the other, still remain; and others in one of a transverse direction, they are 4 feet in diameter, of the time of the Constantines. We saw a very fine specimen of a Turk's house, with marble courts and fountains, orange and lemon-trees, vines and fig-trees, beautifully designed and carried out in all its Arab details, and I hope illustrated by Coste, who must surely have been here. We paid a visit to Abd-el-Kader, who received us most kindly. He is 61, but appears older, unwell, and full of care, though with a mild and winning expression of countenance.

We thence visited Baalbek, crossing anti-Lebanus, at the foot of which it lies, in the plain which divides Lebanus and anti-Lebanus. I shall never forget the impression produced on our minds by the examination of these gigantic, powerfully, and grandly conceived groups. The execution is at once Titanic and exquisite as to finish. The study of Roman architecture is incomplete without a visit to these temples.

I must reserve to a future letter some account of our trip to Athens, which I happily accomplished with my nephew. I am happy to say that now I am quite well. I have been able, in God's mercy, to accomplish all we purposed, but it has been with great fatigue. At Damascus all were ill—travellers, dragoman, and servants—and only four of us went to Baalbek. Bad water, exposure to tent-life in wet weather, six to eight hours' travel in the saddle, had their effect on the whole party, though we have since recovered. Pray present my kind regards to the President, my colleagues, and all our Fellows, and believe me, my dear friend,

Truly yours,

THOS. L. DONALDSON.

DESCRIPTIVE SKETCH OF A MANSION AT HUMEWOOD, COUNTY WICKLOW, IN THE COURSE OF ERECTION FOR MR. W. WENTWORTH FITZWILLIAM DICK, MEMBER FOR THE COUNTY.

By Wm. White, F.S.A., Fellow.

I have been requested to give you a descriptive sketch of a house called Humewood, now in the course of erection from my designs, in the county of Wicklow, Ireland. I have been unable to prepare my remarks with so much care as I should have liked, but I hope they will be sufficiently explanatory. The request to appear before you was made to me in the first instance, not so much on account of the importance of the work itself, or on account of its mode of treatment in regard whether of style or of arrangement, as from the full manner in which the details had been worked out, and from the completeness of the drawings—about half of which only are hung upon the walls, the greater part of the remainder being on the table—exhibiting I hope a certain amount of labour and thought, devoted to a work which did not aspire to be classed above the ordinary average of a small-sized family mansion. Those who know what work is will readily understand that the labour bestowed has been no slight matter, seeing that every detail has been the subject of special study, and exhibits, whether bad or good, the result of my own thought, which has been directed to making each feature appropriate to the especial purpose and requirement of the building. I have endeavoured to incorporate the idea of the Scotch baronial hall with certain Irish peculiarities in the battlemented detail—exhibiting the fusion of the good old Scotch and Irish families of Hume and Dick as now representing the estate; and together with this it has been necessary to combine the use of available material, and the adaptation of the design to all the requirements of modern English life.

The old house had to stand a siege in the Irish Rebellion, and its well-enclosed court resisted the attack till succour arrived. Several of its old doorways and gateways have been incorporated with the new work. Humewood is located about the centre of the western portion of the county of Wicklow. It is a place of note, as being the old residence of one of the leading Irish families. The present possessor, the son of Mr. W. H. Hume, formerly M.P. for Wicklow, took the name of Dick, with the arms and possessions of his ancestor, Mr. Quintin Dick, the wealthy Irish commoner. The pedigree of the family traces back to two Saxon kings, and there have been from time to time throughout the period many who have distinguished themselves, by military valour and otherwise, from that time to the present. The heraldic devices of the various branches of the family will be exhibited in a variety of forms on this building. Over the outer entrance arch of the carriage porch will be a sculptured shield, with Mr. Dick's own coat of arms and crest; within the porch, over the main entrance, will be the Dick and Hume arms side by side in an ornamented recess. The crest of the stag's head is to be sculptured on the corbelling of the western staircase turret, if the granite does not prove too hard to receive such treatment. In the interior it is proposed to exhibit a series of shields in stained glass, beginning with the hall and staircase, and branching each way, through the dining room on the one side, and the drawing room, library, and two adjoining rooms on the other. These shields will occupy only the small upper portion of the light of the window above the transom. This upper light, which is constructed to open outwards by means of hinges on its top rail, in order to give facilities for thorough ventilation, even in inclement weather, at the most available part of the room, will by this means still show the stained glass even when open; and it will subdue the strong glare of light in the upper part of the window without drawing down the blinds.

The house is built, not as the permanent residence of the proprietor, or it would have been on a

far different scale, but only as an occasional resort in the summer recess, or the shooting season; and hence, although it is required to be finished and furnished with every convenience for a residence, the sum placed at my disposal has been so strictly limited as to make it necessary to curtail expenditure in decorative detail, wherever it could be effected without great loss to the work at large. The work generally is simple and massive, and I think I have succeeded in making it tolerably handsome and good of its kind, notwithstanding that I have found myself obliged in execution to modify details which I had already worked out, in order to meet the inexorable requirements of economy. As to execution of the work, I am bound to add that, although there have been (as almost always must be the case in so large a work) some small instances of oversight or of defective work, I have not seen upon the whole a better piece of granite work, although I have lived in a granite country, or better joinery than that which has been carried out by the English contractor, Mr. Kimberley, of Banbury. The granite work has been executed by local masons, under an English foreman, and the joinery is made in England, and sent out. So anxious was the builder to make a good job of it, that he volunteered to use cut granite for the bands and corbel-tables, which I had, on account of expense, arranged to construct of brick.

Whatever of failure you may be able to trace in treatment or arrangement, I can truly say it will not have arisen from want on my part of thought and care in working out the design. As regards arrangement, there is often a great variety of opinion as to what is good and what is convenient; not more so, however, than there is as to what is good and true in style. But neither in style nor in arrangement would I ever allow adherence to precedent to such an extent, or in such a manner, to stand in the way of what is suited to modern requirements, although diverse, and even adverse, judgments may be formed as to my treatment in a comparison with the generality of ordinary modern work. In the treatment of constructional detail, the interior plan and general arrangement of necessity claim our first care; and for exterior effect our attention must be directed to the sky outline before expending it upon minutiæ; and this is of the greatest consequence in an undulating and picturesque country, if we would escape the effect of mere commonplace.

The general design, as it stands at present, was not completed without a considerable number of preliminary sketches, and it has been worked up to a form very different to that which I, at first, sketched, by gradual and successive stages of idea on my own part, as well as of requirement on the part of the proprietor. To some of you it may be interesting to know that most of these rough preliminary sketches are exhibited in two books marked A. and B., and in a glazed frame, the latter exhibiting the almost completed design. There is also hanging on the wall a sketch of the old house, which shows a long unpretending front, rough cast, with granite window and door dressings. The exterior of the new house is entirely of granite, and, so far as plain rubble walling is concerned, is the most available material of the locality, although it is somewhat expensive for the working of the dressings and mouldings. In the treatment of granite, especial care is required to make the mouldings of a broad, bold, and massive, rather than of a small or delicately undercut character, and to avoid as far as possible anything like minuteness and pettiness in the finish.

The walling is done, not after the common custom of disposing every stone as horizontally as possible, and filling up with one or more pinners (great or small) to form a bedding for the next stone; but it is packed piece by piece as the stones will best fit, leaving no joints large enough to receive pinners. The joints, again, are raked or indented to throw off the rain, and not tuck pointed so as to absorb as much as possible, and then to fall under the crumbling frost. The building is lined with brick, banded in with iron cramps. This sort of work requires occasionally bringing up to the level, in order to make a bed for banding the work and distributing the pressure. And to this end I provided the brick bands just named, as shown in the elevation, with cemented beds, thinking also that the colour might

tend to warm up the cold granite. Those bands, however, are now constructed of thin granite courses, and add an appearance of strength, in lieu of the colour, to the walls. The plinth is battered about 3 inches below the plinth courses, and adds greatly to the effect of the exterior by way of strength.

The new house, which is drawing towards completion, stands some 80 or 100 feet in advance of the old building. Its position is a little below the summit, on the south-west slope of the highest part of the estate, commanding magnificent views of the Wicklow mountains on nearly all sides, with a foreground of well-wooded park, leading down on the south-west to ornamental water. The entrance of the old house was to the west; but, seeing that it was desirable to make the principal fronts west and south, the offices are thrown away to the north, leaving room for an entrance on the east. These entrances will be approached by roads from three directions on opposite sides of the park. The stables are placed to the north-east; this is in every case the best position for stables with relation to a house. If placed at the south-west, the stable fumes are apt to be carried to the house by the prevailing winds at times when such fumes would be most offensive; under a north-east wind, all such places are in a state of purification.

The ground falling in the breadth of the house some 6 feet to the south-west corner, allows the basement to be formed about 4 feet below the general ground level at that point; and secondly, the living rooms to be elevated about 6 feet above the ground level. Objection is often raised against building a basement for servants' offices below the living portion of the house in the country. It is said that the ground being of comparatively little value, it is a pity not to distribute the arrangement more widely, as being more convenient for housekeeping and serving purposes. But apart from the great expense of spreading the ground line to such an extent as this would involve—for the keeping up the ground floor at a proper elevation gives almost enough for basement story—it is actually more convenient for purposes of attendance and housekeeping, by bringing, as it does, the servants' rooms into the centre of access to all the living rooms. In such a case, it is of course necessary to take the utmost precautions against the communication of noise and smell from the basement to the living apartments, and a vaulting in brick or stone becomes essential. In the present instance, however, it was of the greatest consequence to elevate the 'living' part of the house above the cold and damps of the country, as well as to give a greater command of the magnificent prospects of the neighbourhood, and also to give a greater importance to the exterior effect in a wild and mountainous district. But, besides all these considerations, it was desirable to build a house capable of defence in case of an attack; and although we may hope that such disturbances have now become a thing of the past, it is certainly most desirable to provide that extent of security which a moderate amount of arrangement and precaution will afford. It is evident that windows of the size required in the living room for such a house as this would be very insecure if not elevated from the ground. The windows of the servants' offices throughout are protected by massive, ornamental iron bars. Whilst speaking of the defensive provisions, it will be well to allude to the means afforded for the protection of the principal entrance, which is beneath the carriage porch, and therefore not to be commanded either by parapets or windows. This porch is vaulted in brick and stone, and over the vaulting is a room in the roof, approached from the principal staircase. Sufficient apertures will be formed in this vaulting for commanding the entrance. There is access also to various parapets from the interior of the roof.

Having now given these preliminaries, I will at once proceed to describe the general arrangement in detail. From beneath the carriage porch is an entrance into the stone vaulted porch on the ground level. From this porch a few steps lead down to the basement; turning to the right, we enter the principal hall, which forms the lower story of the tower. This hall is about 20 feet by 18, and 30 feet

to its vaulted ceiling. From this hall a stone staircase of twelve steps leads into the corridor of the principal floor, through the right-hand arch of the arcade. On arriving at this corridor, one can look through the middle arch into the principal hall, and a third arch leads, by means of a wooden gallery, to the principal staircase over the vaulted porch before referred to. Details of the carriage porch, of the vaulted porch, and of the staircases, arches, and large hall window, will be seen upon the walls. These form some of the principal features in the interior of the house.

From the main corridor, the principal doorway leads into the drawing-room on the left hand; next comes the library, private room, and bed-room *en suite*. There is access to these rooms from the side entrance and back corridor, the dining-room being on the opposite side of the corridor. The nurseries form a wing to the north, in continuation of this range of buildings on the same floor; beneath the nurseries is a room which will probably be used as a morning room or smoking room, accessible to the front terrace, with its closet and lavatory attached; and adjoining it is a gun room, with access to the kitchen court. There is also access from the front terrace towards the stable yard. A communication between nurseries, principal bed rooms, and boudoir over the library, is provided by means of a turret staircase, details of which are exhibited. The base and shaft of this turret consist of enormous blocks of granite. Upon the principal floor level is also a range of servants' bed rooms, placed above the kitchen offices.

The private room and bed-room are constructed to be capable of being thrown into one, so as to form a larger library; in which case the library would be the second drawing room. It will be seen that the access for servants to the front door is very convenient. The coat and hat lobby, adjoining, is also provided with a water closet. The main corridor, opening into principal rooms, is accessible from the servants' offices by a flight of stairs, which is near the servants' entrance to dining-room and serving-room. These stairs are furnished with a tram for running up the dinner. Dinner will be served from the kitchen by a rotating hatch, of which a detail is given: through it dishes can be passed from one side and served out at the other, without letting through either draught, noise, or smell; and the kitchen being far removed, beyond a glazed screen, from the main corridor, and having a lofty open roof, excepting the small portion under the vaulted passage of the side entrance, is effectually cut off from communication with the living rooms, whilst the distance for carrying the dinner is comparatively very small.

It will be seen that the footman's room lies very conveniently for the front entrance and coat lobby; and also to the living rooms by means of the staircase already alluded to, which also affords good access from the butler's and under-butler's rooms to the dining-room. The butler's rooms, with the plate closets, moreover, are sufficiently removed from the back thoroughfares to be quite safe from the intrusion of improper persons; they are provided each with a plate closet; and the cellar, which is down a few steps nearly opposite, besides bins and sink for washing bottles, is provided with a butler's outer cellar. The servants' hall lies next to these apartments, towards the back entrance. On the other side are the housekeeper's and housemaids' rooms, with linen room and drying apparatus; and opposite the housekeeper's room, but just beyond it, are the china room and still room. The still room is provided with a small hatch for serving tea on to the front garden terrace.

Beyond the kitchen there is a scullery court with offices, and in a line with the central corridor of the basement, to the north, is a range of buildings appropriated to washing, drying, and laundry purposes approached by a covered way from the house itself. Beyond the main entrance porch is the side entrance approached by a flight of steps for luggage, and near this entrance is a "lift" for luggage and for coals from the bottom to the top of the house.

Each of the principal living rooms is distinct in its form and proportions. The dining room is about

30 feet long and 18 wide, but is 28 feet wide into the angle recess at the further end. The drawing room is 35 feet by 20 feet, with an angle turret bay commanding magnificent views on all sides. The library is 24 feet by 17 feet, but its breadth is 24 feet into the recessed bay. The private sitting room and bed room are about 19 feet by 15 feet, having smaller and flatter bays corbelled out from the wall, but partially supported by a small central buttress. The ceilings are divided into panels by oak beams supporting the floors above; and the cornices generally are in various woods, intermixed.

The principal doors and shutters are similarly treated. For the principal rooms they are of red deal framing, with oak panels and sycamore mouldings, pinned on with black bog oak. An elevation shows the mode in which the wall panel is to be treated, with an intermixture of wood. There will be also some cedar intermixed in the panelling.

The lower flight of steps from the hall will be of granite, but upwards from the corridor they will be of oak and pine.

The chimney pieces are not yet finally decided upon, but it will be seen from the accompanying drawings what I have proposed. They consist of an intermixture of marble and stone, with stone and marble fenders, and glazed tile hearths, with frame-work of ornamental wood panelling over, some to receive paintings and others looking-glasses.

The chimney flues of the principal rooms are arranged so as to be swept in the basement. Probably on account of their height, they will have to be swept by means of a cord and shuttle let down from the top, and not by an ordinary machine.

The height of the hall extends from about 6 feet below what I call the ground floor to 7 or 8 feet above the first floor, giving it an elevation of some 35 feet. Upon the first floor there is a flying gallery of oak, merely as a feature and point of view for looking down. The bed rooms and dressing rooms, generally, are upon this floor; but the second floor, or what would be more properly called the garret story, supplies very nearly an equal amount of excellent bed rooms.

Water closets are provided on every floor, and there is a good supply of baths. The ladies' boudoir is over the library, near the top of the private staircase which leads from the nurseries.

The back portion of the garret floor will be used as servants' rooms. In the tower is a linen room and work room, and over this a bed room. Adjoining this is a lavatory and water closet for the billiard and smoke room, which occupies the upper story. This is lighted on all sides by long windows, and has a vaulted ceiling, covered with a flat, which is also accessible from the staircase, and commands a magnificent view.

The flag staff is fixed on the corner of the staircase turret. There is access to the parapets round the building.

In the tower, on the north side, is a large cistern, to be supplied by a permanent flow of water by means of a ram from a little stream coming from the mountain side; and adjoining this cistern is a hot-water cistern, which will serve the several sinks and baths. There will be in the basement a warming apparatus of sufficient power to keep the greater part of the house properly aired, during that portion of the year when the house will be unoccupied.

This, I think, completes the sketch of the general arrangement of the main part of the house.

I have said that the laundry is approached under cover from the basement floor. It is arranged for the washhouse to be at the furthest part from the house; then follow the drying room, mangling room, ironing room, folding room, and maid's dressing room, arranged in the order in which they will be required for use. The coal house is placed near the back entrance to the kitchen, but the boiler and apparatus which supply the wash house has a coal house of its own. The drying room is surmounted by a high pyramidal roof with louvres in the sides, and except in fine dry weather there will be no need for drying out of doors.

We now eome to the stables. The stable eourt, about 130 feet long and 100 feet wide, is approaehed by a vaulted entranee, over whieh rises the gabled elock tower. As you enter the eourt there is a covered way,—forming a lobby to the several grooms' rooms, and a stairease to their bed rooms over,—and leading on the one side to the eoaeh-houses, and on the other side to the range of stables, the whole of whieh are in eommunieation by means of this eovered way. There is a back entranee to the stable yard. For the stables there are two ranges of boxes, with eleaning room between, and stalls for visitors' horses beyond. The eloek will have two dials, one towards the town and the other towards the stable.

That is all the general deseription, I think, whieh I have to give; but there are a few items of detail to whieh I would eall your attention. The first of them is with regard to the openings of the windows. It is one of the first questions always asked—"How do your windows open?" These windows are opened by easements, those in the larger rooms opening inwards, and the others outwards. There are very full details of all these on the table or on the wall. Then there is the top light of the windows, whieh I referred to just now, namely, the spaee above the transom. This opens outwards, and is hinged on the top rail. This is a very available mode of ventilation even in inelement weather. The frames of the principal floors are eonstrueted of oak, and the easements of mahogany. Then in most of the rooms there are window seats with baek linings, and these are panelled with diagonal boarding. All the basements are vaulted in briek. The paving of the basement is not yet eompleted, but it will be either of paving tiles or asphalte.

One of the things to whieh I may eall attention is the eonstruetion of the gutters and the drain-pipes. I have made the gutters of blue Staffordshire solid gutter brieks. These are eovered with a snow board, so as to prevent their elogging when snow falls and thaws; and the drain-pipes are of large soeketed glazed earthenware pipes, down through the middle of the wall; but I have provided, in ease of stoppage, an overflow at the top, and also an overflow or "warning" pipe at the bottom of the plinth, so that in ease of stoppage it will be readily seen, and the water will run away, thus preventing the possibility of damage to the house.

The roofs are eovered with brown plain tiles, with red valleys, some made in England and some in Ireland. The ridges are eovered with red erimped tiles. The turret staireases, of whieh there are two, one to the main tower, and the other in the western front already referred to, are of wood with a wood newel. This is a simple and inexpensive mode of eonstrueting them, and is better for general use than the ordinary one, though it does not possess the advantage whieh stone has of bonding in the newel, and giving additional support to the building. The turrets generally are eovered with slate, some of them green and grey, in bands. On the mullions and jambs I have introdueed a very slight moulding. On the jambs, whieh are deeply recessed, there is a round eontinued from the straight of the newel with a single low fillet at the edge; and the mullions have in addition a small rounded quirk, giving it almost the effeet of an ogee moulding. I know some people say they prefer leaving granite with its erude sharp edge. I eonfess I do not agree with them; I think we want some of the softness of art eombined with the sternness of the material. Then there are the eorbel tables under the parapets, of whieh there are details. I had proposed, as I said, to build these in briek, but they have now been made of granite, eonsisting of slightly arched spaees in the rounded eorbels. I had also proposed to put a eoping of tiles on the steppings of the gables, simply for the sake of eeonomy. These also have been exeeuted in granite, to the great improvement of the substantial look of the building, even though it has not quite so mueh eolour to warm it up as it would otherwise have had. The ehimney tops I have treated in a mueh simpler way as regards the upper part, but with a greater number of single plinth weatherings, as shown in the illustration, finishing the top with a hollow and half round, instead of a projeeting eorniee, whieh I found would work out far too heavy for the general effeet of the building.

I do not know that I have anything further to refer to, but from remarks which have been made upon the drawings, perhaps it will be interesting to those present to be told that the set of plans and elevations, which are bound together in the folio, are not drawings, but are executed by photo-lithography, reduced to one-twelfth from the one-eighth scale drawings. I may add that they were not printed in colours, but were tinted afterwards in the office, the outline only being printed, and those were executed by Mr. Bessent, of Essex Street.

In reply to inquiries, Mr. WHITE explained that before building the parapet, or laying the gutters, there was a good bedding of cement put in quite independent of what was to come over it; and then the gutters were bedded and jointed in cement over that, in two levels, one bonding over the other. The parapet was of granite, and the coping also. There was a little bit of upright tile to form a sort of frieze under the eaves, and there was a plain tile in cement overhanging to form a drip. [Mr. White, by means of a sketch, explained the position of the snow board, from which, he said, the accumulation of snow would run off as it thawed, instead of sinking into slush and freezing in a mass]. There was one detail, he said, which he had omitted to mention. This was the construction of the central flat between the two main roofs. It had first of all a course of slates or tiles dry laid upon the joists. He called it a flat, but it was in fact a fall to carry off the water. First there was a course of slate laid dry; upon that was a course of cement, and upon that was a course of plain tiles swum in cement; this was repeated, so that altogether there were three courses of tiles and one course of slates, with a bedding of cement between each, and being finished in tiles on the surface it made a most excellent and durable flat. His own experience was that there was no greater nuisance in any building than large lead flats. They were constantly requiring repairs, in which the proprietors were subject to petty peculations on the part of those who did them. The cost of the building was £15,000. The reason of the joinery work being executed in this country was that the contractor had his sawing and planing mills, and other machinery for joinery here under his own eye, although, no doubt, excellent work could have been procured in Dublin.

Mr. JOHN P. SEDDON (Hon. Sec.).—I beg to propose a cordial vote of thanks to Mr. White for his very interesting paper. I feel personally obliged to him for the way in which he has brought before us the details of this work, and for the profuse illustrations with which it is accompanied. I regard it as one of the most useful practical papers that we have ever had. In a work of this kind of course there are always a number of points which may be very profitably discussed. The whole subject has been brought forward without the slightest reserve; the details are numerous and thoroughly worked out, and I feel that Mr. White is entitled to our best thanks.

Mr. T. ROGER SMITH, Fellow.—I am very happy to support the vote of thanks. This is a very beautiful collection of drawings, and well worked out. It would be a pity on a subject of so much interest to separate without discussion on one or two points on which difference of opinion may arise. One such point is the treatment of granite. It seems to me a great advantage for an architect to work in granite, for he cannot allow himself to be run away with by fancies, the material is so refractory. A good deal of the excellent effect of the recent works in Dublin seems to me mainly due to having been executed in material which will only bear treatment of great breadth and simplicity. I would point out that the buildings at Mont St. Michel, in Normandy, are all granite, and the mouldings are very simple and occasionally little more than a splay; yet a good deal of the effect is charming, because the material so treated comes out with dignity. I think any description of fine moulding is out of place in granite, unless polished, and then you get into great expense. I should be glad to hear the criticisms of gentlemen present with regard to Mr. White's arrangement of placing the kitchens and

other domestic offices under the principal floor of the house. [Mr. WHITE: The kitchen is beyond it.] You have the basement occupied by offices beneath the ground floor. We have been accustomed to associate basement kitchens with town houses; but the moment you escape from town, and have more space at command, the general idea is that it is best to have your offices on the level of the ground floor; and the drawback of a long corridor is compensated by the freedom from noise, and likewise from smells rising out of the basement. At the same time, no doubt there is economy in placing the offices beneath the principal floors. I should be glad to know whether gentlemen have found such an arrangement satisfactory in houses they have built. It is often the case that in buildings we rarely know how our arrangements turn out until after they have been in use some time.

Professor KERR, Fellow.—I beg to join in the thanks of the meeting to Mr. White for bringing the details of this building before us, because it shows at least great moral courage on his part. It is quite impossible for us, with anything like good taste, to enter into a criticism of the arrangements of plan, because we must remember that our remarks might reach the owner of the house in the form of professional objections. I for one have only to say, therefore, that I consider the work to be extremely meritorious in many respects. However, it is quite fair for us to discuss in the abstract one or two questions of scientific interest that have been already raised. Thus, with regard to basement offices in a country house, it may be said that whilst on the one hand they are objected to by very many persons yet on the other hand there are some who may on reasonable grounds prefer them. There is a certain kind of compactness involved in the principle of basement offices under almost all circumstances; and the arrangement, when "classically" managed (I refer, of course, to classical *plan*) certainly allows you to have all the four fronts of the house disembarrassed from adjuncts, which affords in many cases a considerable advantage with regard to the exterior design. At the same time, looking at it strictly from that point of view, dictated to English country families by their peculiar habits, there are obviously serious disadvantages to contend with. For instance, it is difficult to have offices in the basement without a sacrifice of privacy in what is called the garden front. In this building it is obvious at a glance that the lawn must be overlooked from the servants' hall and other such offices. Mr. White's client, we presume, does not object to this; but many would object to it very much. With regard again to the interior convenience of this arrangement, much is to be said on both sides. The carrying of dinner up and down stairs is highly objectionable to some people. I observe that Mr. White does not provide against this by a lift: the one which we see on the plan is apparently only a luggage lift; he prefers the use of a dinner stair, to which I make no objection, except that the servants may possibly think otherwise. The question of the casements of the windows is a second point which we may pause to consider. I myself always think that in this climate we may take the sash window as the only known contrivance which will keep out the weather. This is the reason of its universal application. No casement that I have ever heard of is so effectual against thorough wet weather in England; and I should think it must be the same in Ireland. In my own practice, I venture to introduce sash windows in every case, even in mullioned and transomed windows; and the suggestion which may occur to some minds that the sash window in such a case has an unpleasing effect externally is not I think borne out in fact, if you contrive accordingly and make sufficiently deep reveals. I would next ask Mr. White to oblige us with a little more explanation with regard to his gutters and flats. When he says there is nothing more odious in a house than a lead flat, we must take that with a considerable reserve. The construction of this tile and slate flat upon timber joists is a thing which at any rate is rather novel. If Mr. White says it keeps out the wet, no doubt it does so; but I do not think he will succeed in persuading many people to prefer such a thing to a lead flat. With regard to the gutters, they are perhaps as remarkable as the flat. The construction of these two gutters side by side I do not quite understand; but I would

more particularly ask Mr. White to say how the down pipe acts, which is built inside the wall. It is an invariable old-fashioned rule to have the down pipe outside the wall. I remember in my younger days putting such pipes inside the wall, for the sake of outside appearance; and some time afterwards, when I visited the house again, I found that some local builder had very sensibly put up new pipes outside. I am much inclined to think, in spite of all our friend's ingenuity, overflowing must be the portion of his pipes. In some unexpected circumstances it may be found that they have been standing full of water, and that the water has worked through some unexpected place in the wall. At the same time, I have no doubt that Mr. White's undoubted ingenuity has provided as far as possible against such a contingency. Then, again, he has not favoured us with his views—perhaps he thinks it unnecessary—about his ornamental ironwork. The peculiar curves and twists which he gives to the hinges, the demonstrative determination with which he avoids what we are accustomed to consider a true contour, the firm and muscular resolve on his part to make a thing crooked, I cannot help seeing, and knowing his artistic creed, cannot help admiring. The ornamentation on the joiner's work is also in like spirit, and worthy of being called original. The mouldings are such as I never saw before; they may possibly look extremely well. I say this because I have seen Mr. White's work in execution elsewhere, and have admired it, and this even when I could not approve it. One cannot ask him to explain the principles on which he chooses to design; but there is a unity running through the whole which permits no doubt of his feeling perfectly satisfied in his own mind. It is quite evident that Mr. White has taken very great intellectual pains in the multitude of contrivances which he has adopted. I hope he will find them all successful. I beg to join most cordially in the vote of thanks which has been proposed.

Mr. C. F. HAYWARD, Fellow.—I have pleasure in supporting the vote of thanks for the treatment of this important subject, though it is an extensive one, and, if we chose to go fully into it would occupy much more than this evening in discussion. We have not all of us to build cathedrals or law courts, but we are all interested in the details of a house and the best arrangement thereof. The practical answer to Mr. Smith's enquiry as to basement is simply this,—if the position warrants it, and the proprietor agrees to have basement kitchens, there can be no sufficient reason to urge against it. Servants are obtained who do not object to that arrangement. But if you have to build in the country, for persons accustomed to the kitchens on the ground level, they are sure to object to the arrangement which generally obtains in London houses, and, in my opinion, with good reason. But it seems a practical answer to the whole case to say, If circumstances warrant the adoption of either plan, put the advantages against the disadvantages, and the balance will be on the side which is most agreeable to the proprietor, so easily is the matter to be adjusted. With regard to this flat roof constructed in tiles, I feel the full force of the disadvantages in a lead flat mentioned by Mr. White. One is the frequency with which it is obliged to be repaired, the liability to fire, and the little purloinings which go on during such repairs. I should also be glad to know the comparative cost of this construction.

Mr. J. BROOKS, Visitor, thought it objectionable that the servants' offices should command the view of all the principal garden fronts. He did not know what means Mr. White had taken to prevent the overlooking of the family and company in their daily walks in the gardens, or whether rough plate glass was put in to shut out the view. The numerous drawings exhibited were deserving of special remark. It was evident they were all the conception of one mind, pervading every detail, even the most minute, down to the iron work which had been criticised this evening. He thought the iron work was as characteristic in its style as the other parts of the work.

Mr. J. MORRIS, said he might point to a costly residence, in Leicestershire, where the necessary elevation of the ground floor was obtained by a series of arches or vaults built up to the desired level.

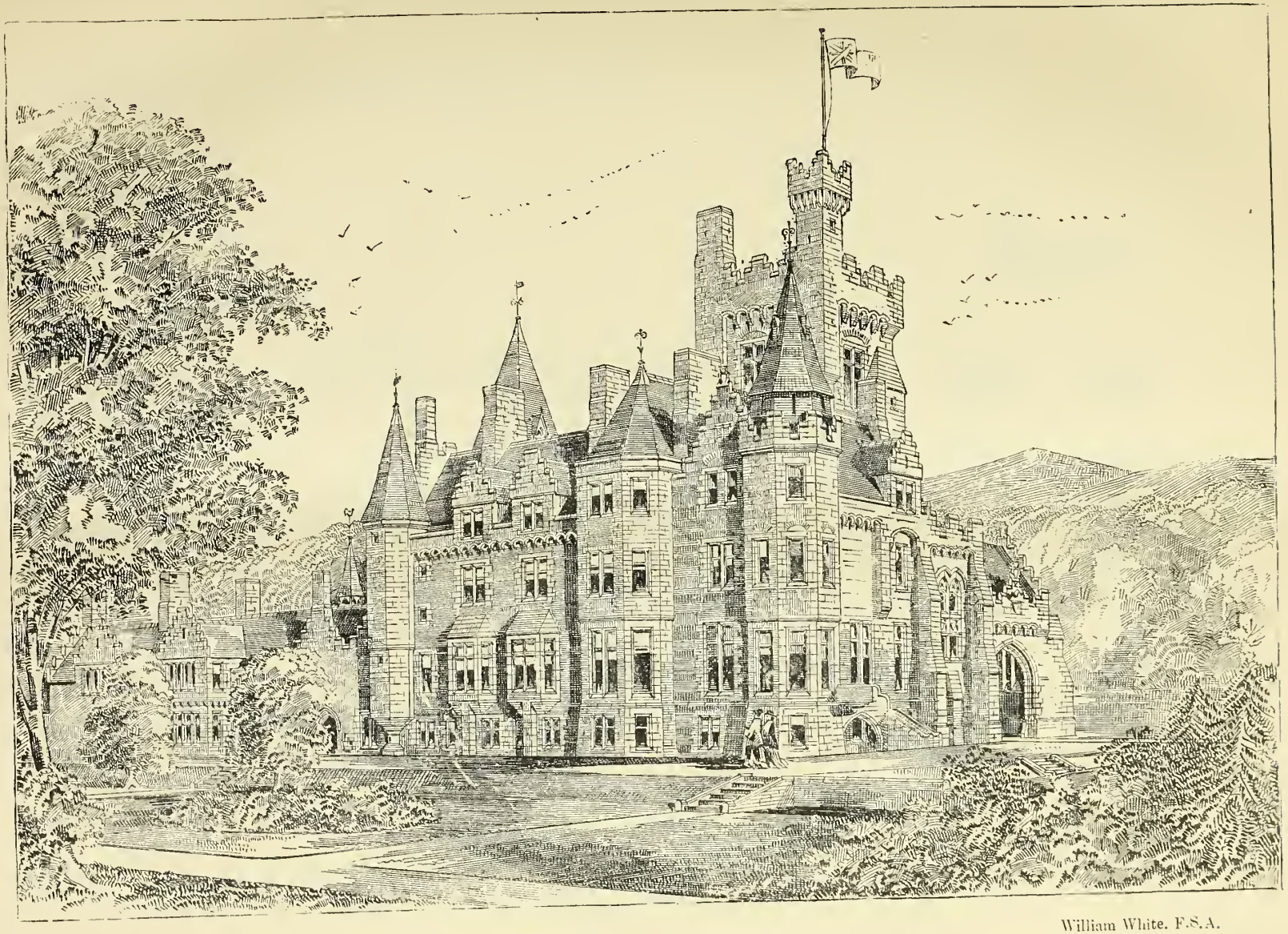
In the present case economy was an object, and it was a natural application of the basement to use it for the servants' offices. Nothing was easier than, by planting shrubs and by forming terraces or other constructions, to shut out the view from the offices. There could, he thought, be but one feeling of admiration of the manner in which Mr. White had produced his drawings. It must be interesting to any client to see so many as were here produced; and when they were told that these were only a portion of the number actually prepared, it carried them to the question not only how architects earned their commissions, but as to whom the drawings should belong to.

Mr. WHITE.—I beg to express my thanks for your kind appreciation of what I have done. I will say a very few words upon the several points which have been referred to. With regard to the arrangement of the basement for the kitchens and other offices beneath the living rooms, and whether the dinner smells or not, I suppose I shall be better able to give you a more decided opinion in two or three years time, when I shall be happy to tell you what the experience of the house is. But the question here was this,—There must of necessity be a basement of 8 or 10 feet,—first for the sake of getting up out of the cold and damp, and next for the sake of the prospect, and it would have been a most enormous waste of that 8 or 10 feet if it had not been used for the servants' offices; and the kitchen, placed as it is, cannot give rise to any inconvenience. As far as any noise is concerned, I apprehend it would be shut out by the vaulting, and the dining room is over the housekeeper's room. The kitchen itself is beyond the whole suite of living rooms, and the entrance to it from the long corridor is at the very farthest point and beyond a glazed screen. So that any odours escaping from the kitchen would be cut off, and rather go out in the opposite direction, and the open roof of the kitchen rises beyond the main building. I consider all this part being brought into such very available communication with the living part of the house is a great advantage; but on a smaller scale I do not think I should ever build the kitchen but on the ground floor. I have built a house for myself, and have placed the kitchen on the ground level; but my neighbour, also an architect, has built the kitchen down below. With regard to the overlooking of the garden from the servants' offices, it is to be remarked that the portion occupied by the housekeeper, and work rooms, overlooks a part of the grounds which will not be much used by the family or visitors. It is not a private part at all. It is the way to the stables and entrances and different parts of the estate. With regard to the other front, it is true these windows do look upon the private garden terrace, which would be used by the family. There, I must confess, that for securing privacy, I have had recourse to that barbarous means of putting up rough plate glass to above the height of the eye, the upper part of the windows being of plain glass. Then as to the lift for dinners, I believe that a lift for dinner purposes is only a lift for smells all over the house, from what I have heard in other places. There is another point with regard to the question of sashes and casements. I have seen as much rain and felt as much wind come through sashes as casements, and I have seen casements which were impervious to wind and rain in the most exposed positions. I have also seen sashes which do let in a vast quantity of both. But my chief reason for adopting casements—and it is a point to be strongly insisted on with reference to casements and sashes—is, that if you have a sash it is a great labour and bother to raise it from sill level to such a height above the eye as to get a good clear view of the sky and scenery without trouble; whereas, if you wish to open your casement to this height at once, you do it easily, and you get your entire field of scenery and prospect, a thing which I feel very strongly upon myself, as I have a great liking for looking out of a good open window when I can. As to the down pipes in the walls, I am afraid my friend, Professor Kerr, must have put in very small pipes, insufficient for the water, and without overflow or warning, for I have myself used them in this way before with great advantage. The diameter of these pipes is 6 inches. Besides, the outer wall is

independent of the inner casing of brickwork, which lines the house. With regard to the employment of true curves for mouldings, it is a matter open to question. True curves can be constructed with little trouble or cost: they may be common-place, or may not be. Of course it is impossible to explain or define why one moulding is better than another,—why one point which is simply artistic, and not scientific, should have a result more pleasant to the mind than another. All we can aim at is a result which shall satisfy ourselves.

THE CHAIRMAN.—I am sure it is not necessary, but, as a matter of form, I will now put the motion of vote of thanks to Mr. White for the very liberal way in which he has brought before the Institute the details of so interesting a work.

The vote of thanks was then passed by acclamation, and the meeting adjourned.

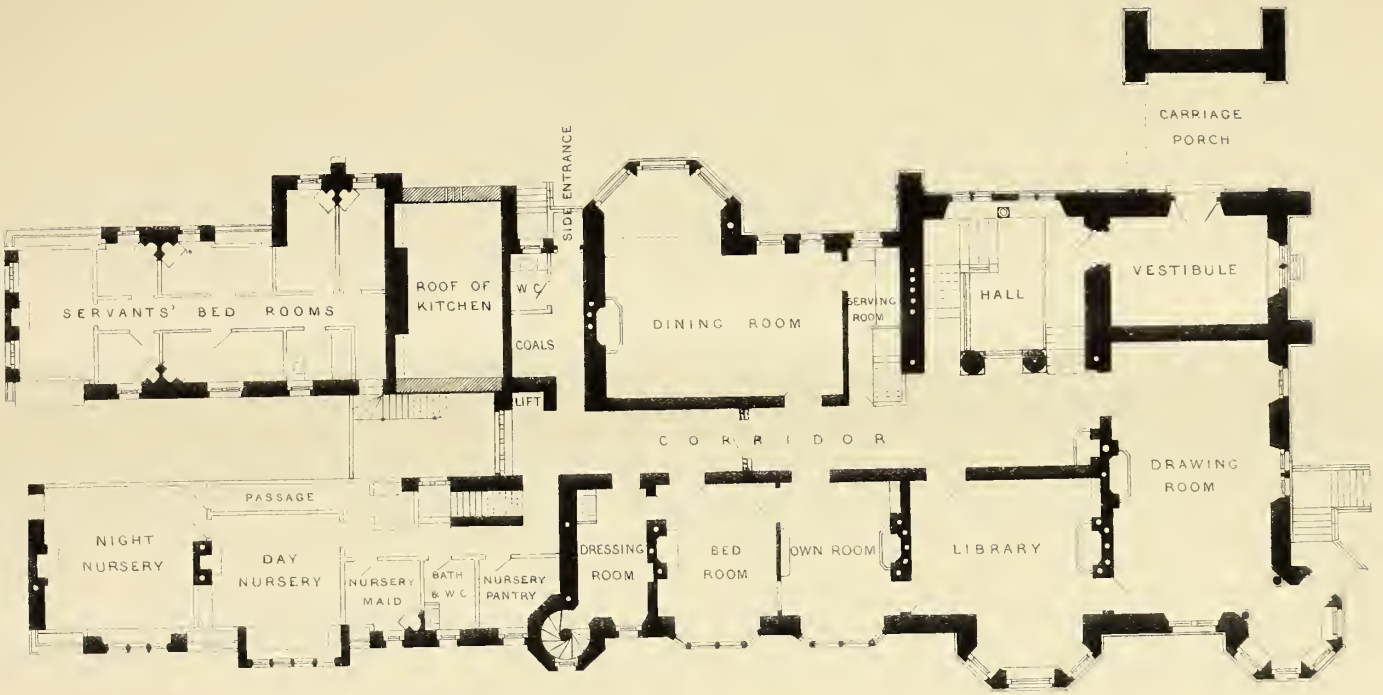


William White. F.S.A.

HUMEWOOD, CO. WICKLOW.

S.W. FRONT.

Mansion at Homewood : Co. Wicklow



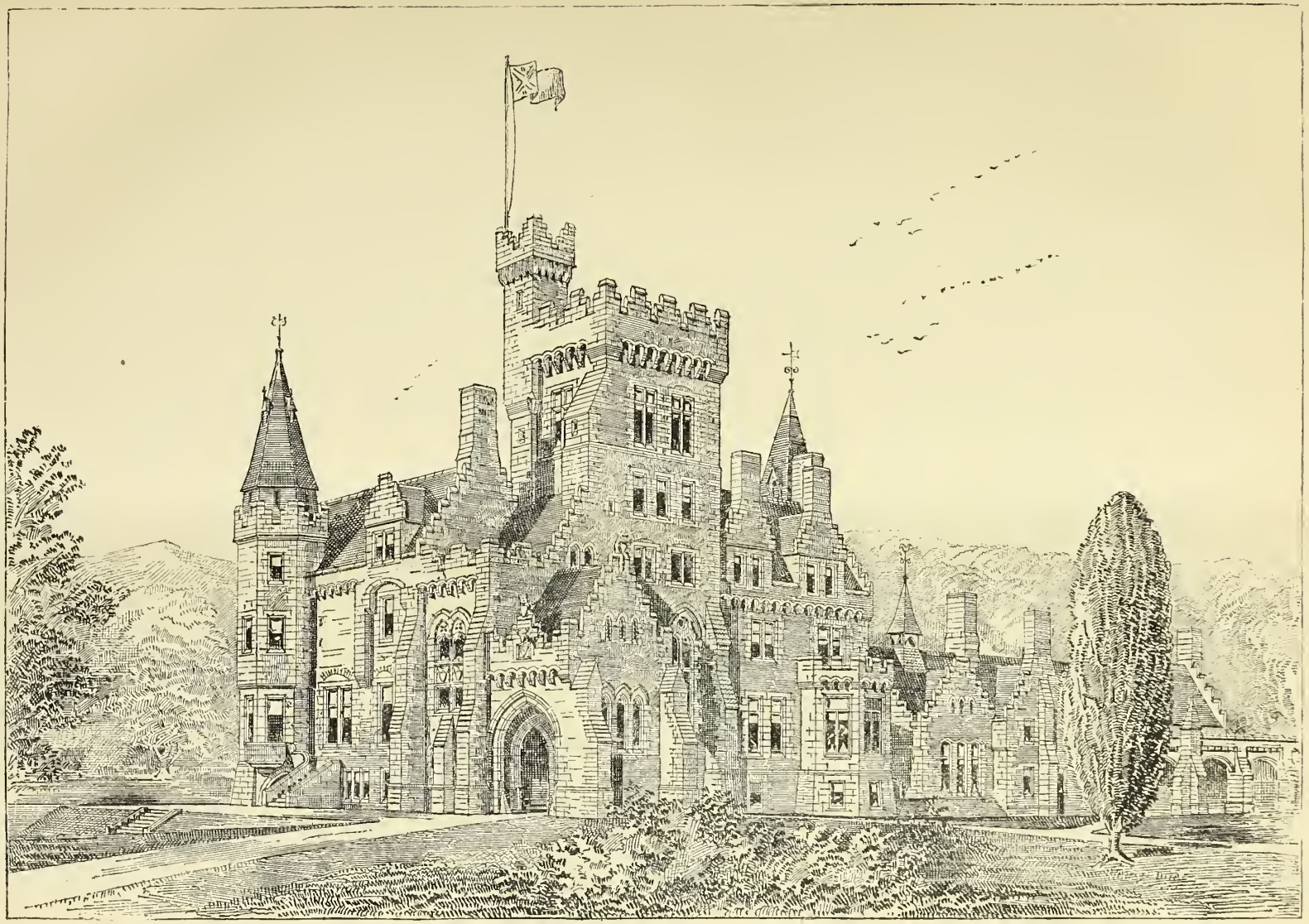
Ground Plan

Scale 24 Feet to One Inch

10 20 30 40 50 60 70 80 Feet

William White F.S.A.

Kell Bros Lith Castle St Holborn



William White, F.S.A.

HUMEWOOD, CO. WICKLOW.

S.W. ENTRANCE FRONT.

Royal Institute of British Architects.

At the Ordinary General Meeting, held on Monday, 18th January, 1869, CHARLES BARRY, V.P., in the Chair, the following Discourse was delivered :—

A DEVELOPMENT OF THE THEORY OF THE ARCHITECTURESQUE.

By Professor KERR, Fellow.

IT is well known that during the last five-and-twenty or thirty years one speculation after another has been submitted in England to the public, and the architectural profession, with the view of determining the proper principles of architectural art, and of supplanting the government of certain other principles which are alleged to prevail universally, and to be erroneous, and indeed pernicious. Those who are old enough to remember the time will recollect that, at the commencement of the period "Fitness," for example, was very largely dwelt upon; "Unity with Variety;" "Simplicity with Harmony;" and so on. All these principles were, of course, in themselves extremely vague; but, practically, they only proceeded upon the supposition that we were previously possessed of the material to which to apply them,—that is to say, that the rules and examples of antiquity, and the "precedent" derived from other accepted practice, were to be accepted as a completed volume of fundamental *data*, beyond which we needed only the guidance of such general principles as I have quoted. Later in the day we had very different principles set up. We were called upon to appeal to "nature," and set aside precedent; we were asked to repudiate the mere custom of design, as an unworthy standard; we were invited to devise off-hand any number of novel forms, and even new styles, to suit passing circumstances, as if there were no limit to the resources of our ingenuity. But little came of all this; except it be that more recently still we have had an entirely new character of speculation set up, which I may call an appeal to mere sentimentalism, poetic and romantic. We are now continually called upon to discard all common and everyday notions, and to apply to a sublimated and refined imaginative sense, which they who consent to exercise it do not seem to possess, and they who suppose themselves to possess it do not seem able to communicate.

In order to illustrate my meaning, and in a manner to start the argument I am about to pursue, allow me to contrast the *dicta* of two very celebrated doctors of architectural reform. I find, in the lately-published new edition of the Gwilt of our early days, what is apparently a very excellent dissertation on Mediæval architecture; and it commences with an incidental statement of certain principles,—those of the late Mr. Pugin, on the one hand, and some of those of Mr. Ruskin on the other. Mr. Pugin's rules are the following; and you will readily perceive, although they are now somewhat old-fashioned, what a great deal of truth there is in them,—more than enough to cover a little want of precision and completeness in the scheme, with indeed occasional redundancies also :—

"I. There should be no features about a building which are not necessary for convenience, construction, or propriety. II. All ornament should consist of enrichment of the essential construction of the building. III. The smallest detail should have a meaning, or serve a purpose. IV. The construction itself should vary with the material employed. V. The design should be adapted to the material in

which it is executed. VI. Pointed architecture does not conceal her construction, but beautifies it. VII. Plaster, when used for any other purpose than coating walls, is a mere modern deception. VIII. A flat roof is contrary to the spirit of the style. IX. A splayed form is necessary for piers, arches, base-moulds, strings, and copings. X. All mouldings of jambs are invariably sunk from the face of the work. XI. Large stones destroy proportion. XII. The jointing of masonry should not appear to be a regular feature. XIII. A joint in tracery should always be cut to the centre of the curve where it falls. XIV. The external and internal appearance of an edifice should be illustrative of, and in accordance with, the purpose for which it is destined. XV. It is a defect to make the two sides of a design correspondent, if their purposes differ. XVI. The picturesque effect of the ancient buildings results from the ingenious methods by which the old builders overcame local and constructive difficulties. XVII. The elevation should be subservient to the plan. XVIII. Details are multiplied with the increased scale of the building." And now for Mr. Ruskin. That very different writer's principles are stated in these terms:—"I believe that the characteristic moral elements of Gothic are the following, placed in the order of their importance:—I. Savageness; II. Changefulness; III. Naturalism; IV. Grotesqueness; V. Rigidity; and VI. Redundance. These characters are here expressed as belonging to the building. As belonging to the builder, they would be thus expressed:—I. Savageness, or rudeness; II. Love of change; III. Love of nature; IV. Disturbed Imagination; V. Obstinacy; and VI. Generosity." Now here we have two writers, both supposed to be of the same tendency, both of most muscular character, and both well versed in strong language, and notably hard-hitters; but in the one we have the practical architect, while in the other we have the mere speculative enthusiast. The contrast is suggestive in many ways, and will at least serve the purpose, I hope, of showing the need for some such endeavour as I have now to make before you.

Some of us may be reminded, perhaps, that not much more than half-a-century ago a somewhat similar bewilderment existed with regard to the art of painting; and it is a well-known fact that this was in a singularly large measure dispelled by the apparently simple proceeding of the introduction of a new phrase. We are told that words are of little value except as names of things; granted; but it often happens that a word, when it formulates an idea, and is accepted in one particular sense as expressive of that idea, does very much, not merely to bring a disputed point to a distinct and definite issue, but to clear up positive misunderstandings; and I think that in the present condition of architectural philosophy, if I may so call it, we are in a position to introduce a formulating phrase corresponding to that which was so successfully adopted in the case referred to, and, by the use of the word "ARCHITECTURESQUE," if we could agree upon a thorough understanding of its applicability, to simplify our position as regards our art of architecture, as much as the word "picturesque," introduced into this country something more than half-a-century ago, has served the same purpose with regard to the art of painting. In other words, although it is well known that this term had been used in their own form by the Italians for generations, and also by the French following them; yet, nevertheless, the effect of its acceptance in English art was much greater than might have been believed possible to attach to the mere introduction of a new word; and my proposition is, that if we will now try the same simple experiment in architecture, it will be found to succeed equally well.

The question I have to propound to you may be first put in the following form:—Is there, in our art of architecture, a certain artistic essence which is peculiarly its own? Look, for instance, at a work of mere building. Suppose it to be in point of structure a perfect work, in respect of contrivance all that could be desired, and as regards science faultless; yet, when looked at by the artist, this building shall be simply dead; devoid of everything like vitality; helplessly dumb in anything like speech. But the artist shall put his pencil over it; and, like the enchanter's wand, this shall produce at every touch

a manifest transformation. That which was dead becomes instinct with increasing life; that which was dumb speaks an intelligible and fascinating language. Now what is it that the artist has thus added, to produce so marked a change? That upon which the process has been performed was *Building;* that which is the resultant of the process is *Architecture.* Something has been added to Building; it is now Building plus something, equal to Architecture. That something I say is the Architecture-essence, and I call it "the Architecturesque." What is it? We may designate it dress. Not that I desire you to suppose that architecture is to be described as a material clothing. It is all immaterial; but we may for the present call it by the name of dress, or ornament, or embellishment, or beauty, or what such word you please.

A few months ago I had occasion to give a lecture to the junior society of our profession, and chose this as my subject. I then contented myself with endeavouring intelligibly to suggest the necessity for the recognition of this special artistic quality, and the possibility of our adopting this phrase for the sake of formulating the idea involved; and I preferred to introduce the subject in this way, in order to see whether I should be at once and with any authority contradicted, before presuming to develop my theory to this more advanced society. Well, I have not been contradicted. I do not venture to suggest that I shall not be contradicted here; but I consider I have, by my previous argument, at least entitled myself to your indulgence, if I claim permission to use the new phrase in the rest of my discourse as negatively accepted, if no more.

Let me therefore at once endeavour to find a few simple examples (and the simpler the better at present) in which to trace the initiation of the architecturesque treatment of building; (see Diagrams); and I will merely premise, by way of a general proposition, that the introduction of such a quality would be the direct result of that desire for ornament which is inherent in the human intellect—that desire which in itself, more than any other conceivable consideration, separates the intelligence of man from that of the lower animals.

On the first line of illustrations I have exhibited what I consider to be the architecturesque development of the column and entablature; not historically traceable, perhaps, but æsthetically so, which is the same. First, there is the mere trunk of a tree, set up as a pillar. It rests upon a plain horizontal sill, and supports a plain horizontal lintel; and both are squared, almost of necessity. In the second drawing the tree trunk becomes an upright stone. It is squared, and simply vertical as before; the lintel is of stone, horizontal and squared; and the sill is of stone, horizontal and squared. The third drawing shows, elementarily, the introduction of the idea of ornament, of course of the simplest possible kind. The upright pillar is furnished at the summit with what we shall call a mere projection; which is the simplest form of ornament; and the capital is thus initiated. The sill is converted, we shall for the present say, into steps, and a simple stylobate results. The lintel has a projection—I do not yet say a moulding—along its upper edge; and the architrave is initiated. A further course is added; and perhaps a third. At all events, a projection like the rest is made to crown the summit of the whole (more particularly for another reason to be afterwards explained), and initiates the cornice. Indeed, we have the entire entablature; the entire order; all the parts suggested, as I think, in the simplest manner. (Observe that the crowning projection, or cornice, is suggested with additional force if there happens to be a sloping roof above.) The next in the line of diagrams represents the full Greek Doric order in its proper proportions; and one sees at a glance how small is the step from the simple and crude result lately arrived at, to that which we are accustomed to consider as the most striking exhibition the world has ever produced of a refined architectural effect based upon the smallest possible expenditure of ingenuity in respect of forms or features. The Greek Doric is, as matter of fact, and of merit, this: the earliest and the simplest of all finished archi-

tecturesque compositions; and strange to say, with all this primitive character, in its finish so refined that it still maintains its hold as one of the most perfect works of the art. The next figure represents, not the Ionic order;—I pass by the Ionic as a mistake. I say so with all reverence for the designers of the matchless Doric and Corinthian. And in what I have presented as the typical Corinthian, I have intentionally introduced supplementary features,—for instance, especially the pedestal,—in order to show that the essential features of the order are still precisely the same, only in more ornamental development. The capital is adorned with the leaves of a plant, which happened to offer facilities for architecturesque treatment; the mouldings are carved, for greater embellishment, on a similar principle; and that is all, except that in the pedestal we have perhaps an example of what I shall presently call the Spurious Architecturesque. The last figure on the same line represents one of the Egyptian columnar compositions, and indicates a different principle of design. Observe the bell capital, originating so far in the same elementary notion of ornament as before. It does not, however, form the real summit of the shaft; there is a squared block above it, under the lintel, not easily accounted for, I think, on any very simple principle. But what is more peculiar still is, that the line of profile returns inwards at the foot of the shaft; and this, coupled with a sort of crude leafwork which is introduced at that part of the column, and also on the bell capital, gives to the whole shaft the character of being imitated from, or, more properly speaking, suggested by, some vegetable object, as if it in fact were made to grow out of the ground; a notion ingenious and interesting enough in connection with so early a period of human progress, but as an architectural, or rather architecturesque contrivance, a very inferior production beside the columns of the Greeks, a well meant, but clumsy and mistaken act of design, and so far spurious architecturesque. At the same time, observe that the elementary development of stylobate, column, and entablature, as a complete order, is the same as before.

The next line of drawings represents the development of the architecturesque in the arch. The origin of the arch is not generally properly understood. Most people suppose that the curve of the circle, as a form or shape, originated the structure of the arch. So much for our education in shapes: but nothing can be a greater mistake. The origin of the arch is simply in the disposition of timber struts, as in the first figure on the line; and accordingly, in the second figure, we have the same principle applied to stone struts, on a plan well known to have been carried out in primitive building, and by the Greeks themselves, and differing from timber-work in no respect except in the material. In the third figure we have the plain semicircular arch, and in the fourth the pointed arch, both merely structural; and I am quite of opinion that, in accordance with what I have just said, the pointed arch structurally speaking, that is, in principle of building although not in the development of art, is older than the semicircular arch;—that it is stronger, every one knows,—which affords another reason for coming to the conclusion. At any rate, there being no ornament in this line of diagrams thus far, when we begin to introduce the ornamental we go in two directions, as suggested by the remaining two examples. The one is the classic arch, with a simple architrave; and it seldom has much more in that style, which does not encourage arcuation. But the other, as an instance of Gothic tracery, I have represented in an intentionally elaborated form, to afford an opportunity for remarking that I look upon Gothic architecture as the special development of arched art, in which, throughout the whole of the most intricate of its ornamentation, there runs the structural principle of arcuation as the essence of its artistic effects.

The next line of drawings represents the development of the architecturesque in what is called a cornice. First, there is a shelf on the top of the wall. No matter for what reason in the meantime, one of the first notions which come to be suggested by way of ornament is this shelf, and it is the simple foundation of all architectural cornices. The desire to ornament the shelf would take the form

of one of two things ;—either the interposition of some sort of bed-mould underneath, or the formation of a projection, or fillet, or nosing, along the top line of the shelf itself. The Greeks proceeded chiefly upon the latter principle ; the Romans accepted both. The Egyptians adopted the former only, and in a way of their own. The Mediævalists may be said to have done very much the same. Now, if you give me leave to suppose a nosing, however simple, as in the second figure of the line, observe how readily we get to the Greek Doric cornice, as represented in the third figure. The next, again, is the Greek Ionic cornice; in which the bed-mould certainly appears, but in the form of little else but a nosing to the frieze. In the following diagram we have the initiation of ornament in the second form of a bed-mould; and, adding the nosing, we reach without much further intricacy of development, as the next step of the series, the ordinary typical cornice of everyday use; from which we advance by mere degrees of ornamental detail until we arrive at such a design as that by Vignola, the last figure on the line. This, again, I therefore consider to be a palpable process of architecturesque treatment.

The remaining series of drawings represents the development of the plinth, and of the cornice necessarily in conjunction with it. The first diagram represents the upright wall and the horizontal ground, and no more. We presuppose the desire for ornamental or graceful form. That desire will first, and in the simplest possible way, suggest that the abrupt junction of the vertical with the horizontal shall be what we call cased. Accordingly we effect this by forming a connecting curve, as in the second figure. The next step is this : a profile of grace being thus initiated, and the eye not being satisfied with the abrupt termination at the summit, we desire to complete the curve; and the simplest way, perhaps, is to return it outwards, as in the next diagram; and this will be suggested the more readily if there be a sloping roof at the top. Another illustration, in the following figure, is the case of the ordinary profile of the Egyptian temples. The Egyptians inclined the wall itself considerably, and therefore dispensed with the plinth; but they still required the return of the curve above, and the well-known form of their crowning cornice was the result. In the next instance but one we have the Eddystone Lighthouse, one of the most perfect designs of the kind which could be selected; and in it we perceive a remarkably complete development of that principle of the curve of profile which I have been endeavouring to explain, and almost on structural grounds alone. The diminution from the base upwards, in the form of a perfect curve, and the return of the curve at the top, serve as completely the purpose of artistic grace as they do that of scientific resistance to the waves. Turning now to the diagram immediately before, we see again the profile of the Greek Doric order; and I think it must be plain, that the simple development of architecturesque treatment which I have brought up to this point is precisely exemplified in this example. The stylobate gracefully connects, as with a curve, the vertical with the horizontal. The upright profile then inclines a little. The curve returns slightly but sufficiently in the capital of the column. The vertical line, however, is pursued above in the entablature, until again the curve returns, and of course much more boldly than before, in the crowning cornice, which thus becomes what I have called a shelf, suggested, perhaps, more decidedly still by the sloping roof above. And all this I say is architecturesque treatment.

The last two sketches are merely a representation of the mode of applying the architecturesque to the imitation of natural form. The one represents a cluster of common ivy leaves, the other a diapered surface embellished by the imitation of these; and the principle in view is the well-known and sound rule that, in these imitations of nature in architecture, the forms ought to be conventionalized; this conventionalizing being, as I formulate the matter, their subordination to architectural purposes; that is, the application to them of the architecturesque principle.

We must next endeavour to take a somewhat historical view of the architecturesque. Permit me to observe at starting, that what we have been accustomed to call the principles of architectural design

are, if I am right, simply the principles of architecturesque treatment. Good architecture is true architecturesque, and bad architecture spurious architecturesque. And I cannot help feeling that this term, "spurious architecturesque," may possibly commend itself to thoughtful minds, as indicating in a more emphatic than complimentary manner the radical fault of our present practice in design. Here, in fact, lies the misfortune, by reason of which so many new brooms in succession are brought to bear upon the sweeping of us away altogether. There can be no mistake about it, and there need be no denial. It is our universal reproach; and what is the reason why we are in such a position? Simply this: we have been so educated. We have been educated in superficialities rather than substantialities; in the study of mere shapes, semblances, and surfaces of draughtmanship, rather than forms and features of structural art. Finding ourselves in this position, however, there is this, at least, to be said, that it is altogether a harder task to escape from it than some thinkers appear to suppose; it may take ages yet, and many ages if we do no more than we are doing.

Looking, then, historically at the development of the architecturesque, let me point out the circumstance—with which you are all perfectly well acquainted in some form or other—that there are three great schools of architecture. These are, of course, the Ancient, the Mediæval, and the Modern. Let me offer you, however, further terms of classification; although not definitively, perhaps, so much as suggestively. The ancient would be Oriental; the mediæval would be (to use an old term) Boreal; and the modern would be Occidental;—the ancient exhibiting all the repose of the eastern intelligence, the mediæval all the rude force of the north, and the modern the fickle and flexible "many-sidedness" of western civilization. Again, we call them Classic, Gothic, and Eclectic. Once more, the classic uses great stones; the Gothic uses small stones; while the modern uses any stones, and sometimes, I regret to say, no stones at all, but such a thing as compo. Then, again, the classic is effected by what our old friend Leeds called Trabeation—that is, lintel-work; the gothic by Arcuation, or arch-work; the modern by (let me coin the word) Superficiation, or surface-work. The trabeation is structural enough; the arcuation is structural enough; but the superficiation, that to which we are accustomed—and we must not attempt to deceive ourselves—is post-structural, and very often counterfeit. Once more, if I do not weary you, let me say that the ancient might possibly be designated as Philosophic, the mediæval as Cleric, the modern as Laic; and the philosophic might be considered Rational; the cleric, Poetical; and the laic, Scholastic, or Archæological, or the like; mostly imitative, and consequently shallow. We might further say, perhaps, that the ancient is Real, the mediæval Ideal, and the modern Conventional. And lastly, the ancient has, upon close observation, proved to be more peculiarly and simply Architecturesque, and the mediæval more peculiarly Picturesque, whilst the modern is simply Academic—anything that comes into request. The ancient—the more architecturesque—is spirited, although composed, and perhaps subdued; the mediæval—the more picturesque—is spirited, although discomposed, and perhaps undisciplined; but the modern, in so far as it is so largely conventional, imitational, and academic, has its materials in portfolios, not in quarries and forests, and therefore is too often spiritless and speechless; subdued enough, and disciplined enough, but dead, and that is the truth of the matter. And if we are ever to recover the life and spirit of design it can only be in one way—namely, by structuralism supplanting superficialism.

Turn now more to detail; and let me first speak of Greek design. Of the marvellous felicity of the ancient Greeks in all kinds of art I need say nothing. In the order of the arts, the first developed in any nation being sculpture, the second is poetry, and the third is architecture; and these three run often very closely together, as they did with the Greeks; painting being considerably behind, and music very much more so—not having, in fact, become developed at all in perfection until the fifteenth century of our own era. At any rate, we perceive that architecture, with the Greeks, was very early

developed; and accordingly—as, indeed, I have already incidentally shewn—it was made to deal with very simple elements. Taking, therefore, as a whole the architecturesque of the Doric order, we see that it is so purely structural as to be Spartan in its simplicity, but for its exquisite Athenian proportionment. Not only do the suggestions that are adopted in its design appear positively to avoid everything like the imitation of natural objects (obviously the royal road to ornament), but these are invariably accepted in only the simplest forms, and their treatment is of the simplest also, to the last. In a word, these Doric details are, perhaps, the simplest that it is conceivable for the human mind to put together; and yet, owing to the exquisite delicacy of the architecturesque treatment, the result, as a whole, is so marvellously perfect, as to render it almost difficult to discover how simple and prosaic are the parts. Compare with this the Egyptian subject which I had occasion to exhibit, and the contrast in simplicity, in structural propriety, and in proportion, cannot but strike every one as almost unaccountable. The one is a thing of clear and abiding beauty; the other a coarse and clumsy contrivance at the best, the column as meretricious as the entablature is meagre. In the Corinthian, again, (the pedestal of my example excepted,) the elements are precisely the same; with all its ornamentation, the features are still simple, and architecturesquely correct. The base which is now added to the column puts it at no variance with the Doric, to which, in its exquisite simplicity, no base moulding has ever proved welcome. The more developed character of ornamentation has merely applied in another item the same original principle; and the column, as a design in itself, has accepted the completed curve of architecturesque grace. The capital, again, has primarily the same architecturesque principle, which we found in the Doric; it is further embellished, but nothing more. The entablature, also, is more enriched, but the members are precisely the same in principle. The very pedestal of our rejection is in itself quite in accordance with the same rules of outline. In the Ionic we have next a design which the critic might dwell upon at great length; asking how it happens that the Greeks could have persuaded themselves to adopt the suggestion (wherever they got it) of the voluted cushion for a capital; and asking again how, having adopted it, they contrived to make so much of it. I myself have long felt satisfied,—and I am interested to find Mr. Ruskin of the same opinion,—that this Ionic capital is essentially a fallacious work, or, as I should now say, one of demonstrably spurious architecturesque; and yet it is marvellous with what completeness of artistic skilfulness it was treated in detail, so that an Ionic colonnade is made one of the most graceful things in all architecture. If I were to go on next to speak of Roman architecture, designated in general terms as the debasement of the Greek, I would say that what we ought rather to note is this: that the Greeks left their system in certain respects incompleted; that so far the Romans most successfully carried it on to further completeness; but that wherever the Greeks had completed their system, it had no further to go, and so decayed. When an architectural style, or a system of the architecturesque, has reached its culminating point, there is no resting, it must go into decadence. It is the same with any other art, as the history of all the arts alike has too often proved; and accordingly, if the spirit of the Greek architecturesque came to be lost in Roman practice, it was merely becoming exhausted in old age; and the effect was not so much the work of the Roman intellect as the work of time.

I must now turn to Gothic architecture; and here I will freely admit that I am on somewhat unfamiliar ground. Nevertheless I see clearly enough that the architecturesque in Gothic is substantially the same artistic essence with which we have been dealing in the more ancient examples. I have said that in arcuation I find the sole basis of the entire system of sound Gothic architecture. It is true that the mediæval architects began with the round arch, and used it effectively enough previously to the twelfth century; but they thus far only began to follow a then customary form of building in initiating a novel principle of art; and when this was carried further afterwards, the introduction of

the pointed arch became, not a chosen fashion, but a structural necessity. I have said that the pointed arch is in one sense of earlier date than the round arch. I mean that it is a simpler contrivance; because it retains so much of the simple form of stone struts. It is stronger, also, because of its keeping to this form; and the more pointed, the stronger it is, just as the round arch is the weaker the more it is flattened. When, therefore, it came to be realized by the comparatively unscientific mind of the twelfth century, that arcuation was to be the rule of art, to be carried out to an unlimited extent as the be-all and end-all of a style, it became an obvious consequence, I say, that the weak round arch should be given up, and the strong pointed arch used in its stead. And accordingly, accustomed, as we are, to be taught to think of arches as mere semblances or shapes, and to be plausibly told that the pointed arch originated in the interlacing of round arches, or in the copying of what the Crusaders saw in the East, or in some other idea of mere form, I still think it is a far more intelligent and reasonable theory which traces such a principle to honest structural considerations, and in no way to that mere superficialism which happily had little authority then. Thus there arose the lancet arch. The subsequent gradual depression of its form, and the introduction of more and more elaborate tracery and panelling, I consider to be simply the progress of the principle of arcuation through the process of architecturesque treatment, which continued until that particular kind of architecturesque, still seeking novelty after novelty, at length exhausted itself. And therefore, when we speak of the debased Gothic of the later periods, we are but referring, as in the case of the Romans before, to another ordinary instance of the law of nature, whereby all strength passes gradually into decay. I wish it therefore to be understood that the artistic essence in Gothic, as in Classic, architecture was based on structural principles, and not superficial.

The introduction of pointed arcuation brought with it incidentally a correlative principle of great importance and interest,—that of verticalism. For, although it is obvious that this characteristic is not primarily a condition attached to the use of the Gothic arch, yet that it became such a condition—not merely incidentally, but necessarily—seems equally obvious. In other words, arcuation being in itself of vertical tendency more than otherwise, pointed arcuation becomes *à fortiori* vertical; and thus it was that Gothic architecture become a thing of two conditions, namely, the use of the pointed arch, and the general tendency to verticalism of design; these two working harmoniously together, because the one was in fact the parent of the other.

Now I have said that the architecturesque is still on the same ground as before—that of construction,—and, of course, proportion or shapeliness. I might cite a great many instances from the ordinary features of mediæval remains, but the volume of Gothic architecturesque is too vast, and my acquaintance with it is too small, to give me confidence, even if I had time. A mere reference, almost by way of catalogue, is all I can attempt, but it may prove sufficient to impress upon better informed minds, if they will follow me reflectively, this great principle, that building plus the architecturesque is architecture. Throughout the whole volume we can readily see how a system of definite art-treatment was gradually developed, in this feature and in that;—in pier and shaft, base and capital;—in arching, in vaulting, in groining,—all structural in essence, and none merely superficial; in the buttress, the flying-buttress, the pinnacle—still structural as ever; in plinth, string, parapet, and panel, mullion, moulding, and rib, and tracery infinite; in splay, weathering, and corbelling; in cusp, pendant, finial, crocket, boss, and foliation infinite; always resting upon suggestions of structure and grace; in carvery and sculpture, a whole volume of imitative art, extending from the heights to the depths of nature, using all forms and ideals of being, from the Deity to the creeping things of the earth, from the smile of the blessed to the scowl of the lost;—in wood-work, metal-work, glass-work, and even occasionally textile work;—and in all this the architecturesque, manifested in

certain essential principles and practices of treatment, universally governing each other in the one purpose of producing an immaterial artistic dress, the essence of all being that particular essence of art which makes of building architecture.

All that I can say of this kind must, however, be of little use until after I have attempted to lay down something like a system or scheme of the architecturesque; and I am prepared, therefore, with such a scheme, at least in a tentative form. If I cannot enlarge upon its details as I would desire, I may be able to give you sufficiently definite indications to provoke reflection and inquiry.

I. The *subject* is Building.

II. The *purpose* is Embellishment, or Dress; in pursuance of the intellectual law, which demands ornament in everything.

III. What is the *limit* of that purpose? Nothing short of infinite novelty. The mere instinct of ornamentation itself involves this further principle, and there is no escape from its authority,—the very desire which forces the human mind to the effort of ornamenting the works which it produces, forces it into the perpetual effort after novelty in so doing; in proof of which, as we all know, the most perfect device, once accomplished and fully enjoyed, soon palls upon the sense.

IV. The *means* by which material for the architecturesque is to be obtained are, I think, four:—1. Structure ornamentalised, or rendered in itself ornamental; 2. Ornament structuralised, or rendered in itself structural; 3. Structure ornamented (more or less superficially); and 4. Ornament constructed.

V. For these means we must have *sources of suggestion*, to furnish the supplies of thought; and accordingly to supply primarily features, and secondarily forms. These forms and features, I may say, arise, (1) by structural considerations, such as used to be called fitness,—namely, considerations of various materials, of their various applications, and of the various ends in view in their use. And they arise (2) by considerations of proportion, in which term I must include all shapeliness, whether superficial, solid, or linear—all order symmetry, and harmony, and whatever else of the kind there is to name. Again they arise (3) by imitation of the forms of natural objects, whether from the vegetable world or the animal, or indeed from any other natural source.

VI. There must next be *influences of control* by which these suggestions, as crudely supplied, shall be governed. These I think must necessarily be the same principles as the last, looked at as co-operating, or as acting upon each other. 1. Structural considerations will control the suggestions of proportion, and will conventionalise the imitations of natural objects. 2. Proportion and order will give to everything structural and imitational what we call scale, and array, and shapeliness of every kind throughout.

VII. Lastly, the *conclusive effects* seem to be three. 1. Grace; using the term in the old-fashioned sense, to signify any one kind or another of pleasantness, or what is indefinitely called beauty. 2. Style;—an effect with which we are all familiar, and which it is less difficult for you to understand than for me to explain, but which I may venture to define as an accord of all the parts, a unanimity of artistic expression. 3. Character;—that multiform result which one can scarcely describe except by a few hap-hazard instances. It may be, for example, the character of power, or dignity, or grandeur; that of elegance, or lightness, or richness; the character may be fanciful, or severe, or symbolical, or devotional; or religious, in accordance with any one of many ceremonial systems; it may be domestic in various forms, civil and rural; it may be ethnological, as regards race; or geographical, perhaps rather climatic, as associated with different countries; and lastly, it may be a character more or less exclusively architecturesque, as in Greek work, or more or less intentionally

picturesque, as in Gothic work, or as in some of our modern work, it may be occasionally more or less unintentionally grotesque.

But when I have thus set forth my principles, it is too plain that, whatever amount of illustration and experiment they demand, I have no opportunity on this occasion of trying their effect in criticism; indeed it would require a book, and perhaps not a small one. I can do no more than attempt a few special applications of the architecturesque principle, which may only after all be more suggestive than instructive.

First, take the old problem of the steam engine. The very mention of such a thing nowadays provokes a smile; but some of us are old enough to remember when it was a grave and serious question how to make a steam-engine ornamental by means of architectural treatment. I think the phrase went literally thus:—"How to apply the five orders to the steam-engine?" The first question was, which of the five orders was the most suitable; and this I think was generally decided in favour of the Greek Doric; and accordingly, hollow castings of the most perfect Academical pattern—six diameters high and three-eighths of an inch thick—were solemnly set up to begin with. That they were not columns at all, but empty rinds of columns was never thought of, and the next question was how to adapt the entablature. If I remember aright, the pediment was given up, as a bad job: but architrave, frieze, and cornice (or rather, still the mere rinds of them) were all turned ingeniously to account, and the arrangement very much admired. But how entirely absurd all this was I need not say. In a word, a steam-engine is a subject which of course it is impossible to architecturalise. One might just as well think of applying architecture to a speech or a song: all alike and almost equally are illustrations of that to which the architecturesque cannot possibly be applied.

Take, however, as a second instance, a bridge; and here we find ourselves on very different ground, although at the same time, it has to be acknowledged, the application of architectural features has not been much more successful here than before. A bridge is considered a work of engineering, but that means nothing: it is a work of building, and the principle of building-ornamentation, the same architecturesque which we have been dealing with, has to be applied to it. Occasionally, where extreme simplicity has been adhered to and affectation thus escaped, a bridge has been somewhat suitably treated; but what shall we say of the new bridges on the Thames? They are ornamented after a fashion, and almost elaborately; but I fear we cannot say the treatment has been architecturesque. Even if they have abandoned the old nostrum of setting up a pair of columns, like sentinels, at each successive pier, yet they have got little of anything that is better. That treatment which should be applied to them is, as I have said, the architecturesque and no other; but it must be the architecturesque of a bridge, arising out of the conditions of a bridge, and not the copy of something else which has nothing to do with a bridge.

Again, what shall we say of a wharf or quay wall? Looking at the Thames embankment, for example, from Westminster Bridge, one cannot help feeling what a noble composition it might have been made, in all its simplicity, massiveness, and unaffected majesty, if it had been fairly treated in an architecturesque manner. The landing stages and other such features appear to exhibit a certain muscularity and power of design: but at the same time, we may suggest that there is an opportunity lost in that noble, simple work of weighty building—an opportunity which might have endowed London with one of its most impressive ornaments, one that might have been pronounced worth the money in art as well as in utility.

And now let us look for a moment at the Crystal Palace—not with reference to the building itself, but more particularly with reference to its particular mode of construction. The Crystal Palace was not meant to be an ornamental structure; but why not? The question of ornamentation had not been

disposed of; it had been merely avoided,—no doubt for special reasons; but the circumstance serves to raise the whole question of the application of the architecturesque to iron work. Now, when we hear declamations about new styles, and feel that the declaimers little know the real question, we ought at least to remember this,—that a new material requires a new style of architecture; and, to my mind, if there is one circumstance which more than another attaches discredit to us—(you will, I am sure, excuse me if I state such a case boldly, because amongst ourselves there is certainly nothing like frankness) if there is one fact which more than another tells against us with the common sense of the public school of critics, even when they are not able clearly to understand the principles by which these matters are governed, it is this,—that whilst we have been in possession of this new material—especially in the form of rolled iron—a considerable number of years, we have yet to take almost the first step towards the treatment of that material in an artistic manner! We have been applying mere superficialist and spurious principles all the time, and have not at all grappled yet with iron in a properly structural and architecturesque way. But we may pause to reflect, on the other hand, that this shows how slow is the growth of a new style; for, educated as we have been, even when the fair field is offered to us of new materials,—and we may have many before long,—it is plain enough that we can do very little in a generation. Perhaps I ought to say that it has taken ages in every instance to effect a real change of style. Even with the Greeks, when the world was young and fresh and unsophisticated—great as was their felicity in all arts, and comparatively rapid as was their attainment to perfection in all, it required, as matter of fact, a considerable period even for them to arrive at what they did.

I should like to mention next, more particularly for the consideration of our younger members, two problems which I think must puzzle them. The first is the Egyptian pyramid. When those of us who are not yet old were boys, reading the old-fashioned form of architectural history, they all began, we remember, with a description of the Egyptian pyramids,—they were of undetermined age, of inconceivable bulk, of incomprehensible purpose, at once the earliest and almost the noblest works of architecture, and so forth. But now, looking at them from a more properly architectural point of view, we know better. Their builders, we say, may possibly have applied to them an average amount of skill in proportioning their form, but beyond that there is no architecture whatever in their composition, they are works of mere building. Now, if it is possible to make all building artistic by applying to it the treatment of the architecturesque, I should like to see some of you try to make the Egyptian pyramid architecturesque without sacrificing its peculiar character, and especially avoiding the sacrifice of scale.

The second puzzle I refer to is the common roof-truss. I think few subjects are more difficult than this to treat artistically. We must bear in mind that the structural conditions must be adhered to, and indeed expressed throughout; that nothing is to be disguised, but every point of purpose properly exhibited. I have no doubt the architecturesque has forms and proportions at command to apply to this particular case; but it is a fresh instance of our false education if we find it so difficult to discover them.

Let me now refer to a few cases of another kind, not purely architectural, but sculptural, involving the question of architecturesque treatment. First, if we take our old friend the equestrian statue of the Duke of Wellington, upon the gateway at Hyde Park Corner, we find that subject still as unpopular as ever. The reason, I submit, is that the statue is architecturally treated, but not architecturesquely. Artists universally protested at the time against the statue being placed where it is; and probably their representations might have succeeded, but that the government of the day were unwilling to deprive the great soldier of the pleasure which they somehow imagined he would feel in

looking at it from his own windows. That a more inappropriate pedestal could scarcely be contrived is admitted on all hands ; but the reflection how easily the proper treatment could be effected seems to me to increase the absurdity of the case. A statue of that type and of colossal size ought to be treated, I think, with a special eye to simplicity, or the grandeur of the sculptor's motive is lost. The complete subordination of the pedestal to the figure is another self-evident essential. That the character aimed at should at the same time be that of magnitude, enhanced, if possible, may also be taken for granted. Let us suppose, then, this statue to be placed in an open space ; elevated, but not too much, on a massive block of masonry, rectangular and plain, not too large, of course, but not so small on plan as the usual proportion. Around this majestic base let a stylobate of many steps descend to the level ground, and let there be nothing more. I venture to think that this simple mode of true architecturesque treatment might be found, not only to dispossess London of an eyesore, but to supply in its stead an exceptionally noble monument.

The Egyptian statuary, the Assyrian, and the Persian, appear to me to be remarkable for their peculiarly architecturesque treatment. In early times not only was the treatment extremely simple, but the somewhat crude and eminently conventional forms in which the figures were designed have always seemed to my judgment to accord with the character of architecture better than any superior or more natural work I know. When the Egyptian sculptor modelled, for instance, his colossal lions, we must not suppose that he conceived himself to be imitating the natural lion faithfully. I think he was, on the contrary, expressly conventionalising the lion, for a purpose. That rigid stony repose, the stiff symmetry, and the lack-lustre expression, he was accepting as conditions of building ; he was architecturalising the lion, he was treating him architecturesquely. Again, if we look at the spandril sculptures of Persepolis, and certain early instances of the treatment of figures like the heraldic supporters of later times, we can scarcely fail to see that what I may call their peculiar stiffness is an architecturesque intention of the designer.

I need scarcely say that the Caryatides of the ancients are also notable instances of architecturesque treatment. I think no figures have ever been devised since the Greek age so well suited to the special purpose of supporting an entablature as those belonging to the Erechtheum. There is a certain muscular rigidity, a weight-bearing repose, even in the fall of the drapery there is an expression of structural resolution, which gives a sort of columnar vitality to these figures, so different from deadness of any kind, and all the while so stone-like, that a better instance of the skill of the Greeks in positive architectural effect is scarcely to be found.

If I speak next of the Gothic grotesques, passing in a manner to the very antipodes of architectural sculpture, I feel that I am still able to describe them as being architecturesquely treated. It is true they are not always to be admired ; but when a building of picturesque character is so designed as to sparkle (if you will allow me the word) in the peculiar way that I will venture to designate as *Gothique piquante*, these oddities seem to focus the attention,—especially if they are made to occupy the precisely right points,—and the charm of the picturesque treatment is legitimately accentuated and enhanced.

One more illustration, and the last, shall be our celebrated lions in Trafalgar Square. These figures are, I believe, universally admitted to be not only successful, but successful in the highest degree; and they will serve our purpose therefore all the better. Of course we know that the lions were expressly designed as part of an architectural monument; and what we have to consider is the process by which the artist gradually brought the subject from the purely natural condition to the conventional condition in which we find them. Fortunately, also, for this illustration, Sir Edwin Landseer happened to be professionally more of a painter than a sculptor. Lastly he was a painter of the common sense school. Accordingly it is understood that when he received the commission to model

these lions, instead of diving down into the depths of his inner consciousness, like the typical German, to grasp the idea lion, he went like a Briton to the Zoological Gardens, and sat down to contemplate the beast himself. I daresay when he came to look long enough into the amiable if not vacant countenance of his subject, the conclusion was forced more and more upon his mind that the animal was irrecoverably demoralised. He had been lying more or less hungry behind those iron bars for year after year, seeing unlimited supplies of his natural food passing continually by, but daring to hope for nothing better than a stale beef bone to be supplied to him at a certain hour in the afternoon, with a regularity in itself as irksome as everything else. No wonder then that this lion was so different from one's ideal of the king of the desert in the freedom of his natural condition; but there he was, and all the artist could do was to have him stirred up now and then, in order to force a little more life into his eyes, and a little more of Mr. Ruskin's Gothic "savageness" into his fangs. At any rate, the artist, being a painter, no doubt made sketches of the lion on paper; (had he been no painter, but a sculptor, he would have made sketches, not on the flat at all, but in the round alone;) and so sketching the animal as he found him, the sketches were no doubt faithfully *naturalesque*. But these the experienced animal painter could readily enough transpose into a more expressive form; he substituted for the listlessness of the cage the ideal animation of the wilderness, and the amended sketches became *picturesque*. The next step, no doubt, was to make a sculptor's sketches in the clay by help of these painter's sketches on paper. In so doing, he was manifestly transferring his subjects from the picturesque to the *statuesque;* and there would come into the work more and more of that repose which is so essential to the statuesque character. The artist would then probably take into consideration,—at any rate more definitely than before,—a new question, namely, how to render this the merely statuesque figure suitable for its architectural purpose. This was applying to it at length the *architecturesque*. Now that part of his theoretical purpose I consider he has not performed at all fully; the lions are by no means, I think, completely architecturalized; and I, for one, quite approve the shortcoming; for this reason. If the artist had conventionalized his figures as perfectly as the Egyptians did theirs, people would not have understood him; he would, in this country at least, have been ridiculed for ages,—caricatured and lampooned in Punches yet unborn. Whether he could have accomplished the perfection of architecturesque treatment I do not say. But, considering how much safer it was for him to stop at the point of statuesque success with a slight, but very slight application of the architecturesque,—just a sufficiency of symmetry and rigidity to adapt them to their position and no more,—I venture to say that he has produced works which are perfect for their purpose, as appealing to the ordinary common sense of the British intellect. I am willing to believe that so great an artist has in this way intentionally restrained himself, accepting the risk of the ultimate censure of the dilettante rather than the certainty of the immediate dissatisfaction of the passer by; and I do not hesitate to repeat that, in my humble judgment, this does him all the greater honour as an artist of sound and simple common sense.

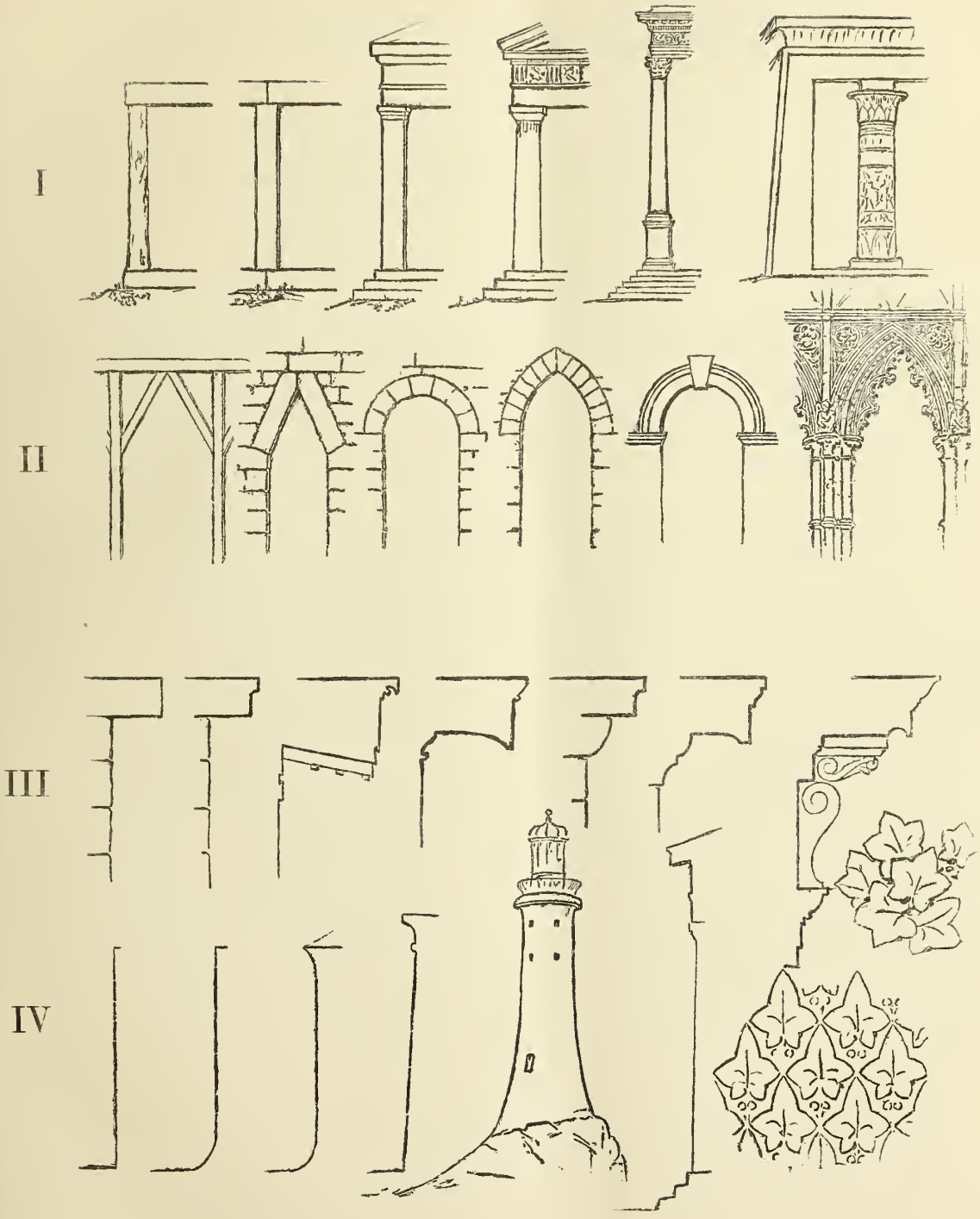
If I had had time, I should have been glad to enter somewhat at length upon the important question of what I have called the spurious architecturesque. I fear you will be inclined to say that I have taken upon myself to confess a great deal on your behalf without asking leave; you may think I have, as matter of fact, confessed too much. But let it be even as I have hinted, we have still a word to say. If we architects are thus guilty of so much that is spurious in artistic principle, there must be for this effect a corresponding and equivalent cause. Is there not here and there, in matters besides architecture, and in perhaps, much more important matters, a good deal of more or less spurious sentiment? Do we not live in the very age of spurious sentiment? History, philosophy, law, politics, poetry,—is there not but too much of spuriousness in every one of these? Faith, hope, even charity,

are they not conventional to the core? And if we, as the custodians of an art whose essential attribute it is to reflect the character of the time, reflect this character all too faithfully, what less than this, and what else than this, could we be expected to do?

After a few remarks from the chairman on the exhaustive and elaborate character of Professor Kerr's discourse,

Sir M. DIGBY WYATT, while remarking that the lateness of the hour rendered it out of the question for the present to enter upon a discussion of the subject of the discourse, could only now express generally, his admiration of the rhetorical skill and subtlety of thought with which the subject had been treated, and so move a vote of thanks to Professor Kerr.

Mr. SEDDON seconded the motion in a few remarks of the same import, and the vote having been passed with acclamation, the meeting adjourned.


I
II
III
IV

Royal Institute of British Architects.

At the Ordinary General Meeting held on Monday, February 15th, 1869, JOSEPH CLARKE, V.P., in the Chair, the following Paper was read:

ON THE SCIENCE OF COLOUR.

By W. BENSON, ESQ.

I PROPOSE in this paper to devote myself mainly to point out some particulars in which it seems to me, after a long and careful study of the whole subject, that the theory of colour usually maintained is not exactly what it ought to be. I will not dwell, therefore, on those accepted principles which are undoubtedly true, nor upon those useful rules and directions which have been deduced either from theory or from practice and observations, by the authors of several admirable works on colour, which have appeared of late years, to whom we are indebted for the evident improvement which has recently taken place in all sorts of colour decorations. And if I venture to dispute some doctrines which have, I think, been taken on trust too hastily by the same authors, and have acquired thereby an authority which they do not deserve, I hope I shall not be regarded as an opponent, but rather as assisting in the same work in which they have so earnestly and successfully laboured. For it seems to me that much of the value of what has been ascertained about colour is lost through a misconception on some essential points; and that important discoveries have been fruitless for want of being known and understood by those who should use them. Though nature affords us a marvellously beautiful and easy mode of instructing and directing the eye in colour, its use has been hitherto ignored in art. Fancy has been often substituted for reason, and authority and positive assertion for evidence; and even when experiment has been appealed to, it has been without understanding its meaning. Hence principles have been laid down as fundamental truths which have no foundation in nature, and are of course useless in art.

If, by elucidating some neglected points, I can succeed in bringing them into the notice they deserve, and induce artists to apply them in practice, and thus aid in establishing correct principles in the world of art, I feel sure that their value will soon be acknowledged, and that no lover of art will have reason to regret the attention which is needful in this, as in every other study, to emancipate the mind from erroneous first impressions, to understand the truth, and to know why it is the truth. Even the increase of interest and beauty in the subject he studies will repay his trouble, without regard to the practical advantages which always attend the right application of science; and the disinclination which many feel to the union of science and art, arising mainly, no doubt, from the felt inutility of spurious science, will be quickly exchanged for congratulation, and desire for more of that good fruit which commends itself to our taste.

In this assembly it will, I suppose, be generally admitted that colours are nothing but sensations excited in the eye by light; nor will it be necessary here to state the proof of what has been believed by all scientific men ever since the era of Newton,—namely, that there are innumerable different kinds of light, each distinguished by its peculiar refrangibility, and the peculiar sensation of colour with which it affects the eye; and that the colours of all objects are combinations of the colours of those particular kinds of light which the same objects may happen to send to the eye.

Now if this is true, and there is nothing in science better established, then assuredly the knowledge of that splendid series of colours which constitutes a perfect prismatic spectrum, and contains in fact the colours of all possible kinds of light arranged in the order of their refrangibility, and therefore the elements of all colours in nature, must be the foundation of the science of colour, or at least a very essential part of that science. For, to take that fundamental question on which so much has been written, What are the simple or elementary colour sensations? if we can show that there are some two of these prismatic rays which, when they enter the eye together, uniformly produce a sensation exactly the same as that produced by a third alone, it is reasonable to conclude that the latter sensation is compounded of the two former; and if we further show that the two former sensations cannot be produced by the mixture of any other rays, then it is reasonable to conclude that they are either simple uncompounded sensations, or at least that they present the nearest possible approach to such simple uncompounded sensations. If, in short, we can prove that some of the prismatic colours are capable of producing by mixture all the rest, whilst themselves are not produced by mixture of any of the rest, we may, for all practical purposes, treat them as the real elements of colour, and dignify them with the appellation of primaries, in preference to all the rest; for if these prismatic colours, when mixed, can produce the other prismatic colours they can *a fortiori* produce all the colours in nature which are merely mixtures of the prismatic colours. The great difficulty and difference of opinion that has prevailed about the question of primary colours has arisen partly from ignorance of the cause of the colours of pigments and other bodies, and partly from ignorance of the nature of the prismatic colours. Here lies the peculiar complication which proves a stumbling-block to many at the threshold of the science. A double analysis has to be made of the colours of natural objects before we can arrive at the real elements of colour. It seems difficult to analyze them into their component prismatic colours, but this is not enough; the prismatic colours themselves must also be analyzed into the real elements of colour. We must find out whether the sensations excited by the simple homogeneous rays are themselves simple or compound, and which are simple and which compound.

Newton, with marvellous skill, effected and proved the first analysis, by the aid of a prism, and called the prismatic colours primary colours, because he did not go on to investigate the relations of these prismatic colours to each other, but assumed, as it seems, that they were all equally simple and uncompounded, notwithstanding that in some of his admirable experiments he found that adding together parcels of the prismatic rays produced colours which were identical with those of other simple prismatic rays.

About a century after Newton, the great German astronomer, Tobias Mayer, observing that it was possible with mixtures of red, yellow, and blue pigments to produce an imitation (though but a poor one) of all the prismatic colours, concluded, too hastily, that these three alone were simple colours, and deserved the name of primary colours. We do not read that he tested his conclusions by any cross experiments, or, in the manner of Newton, investigated the way in which the colours of pigments and of their mixtures were produced,—otherwise he would not have failed to find out what Newton had clearly stated before him, over and again, that pigments act by destroying light, and that the colour of the mixture of two pigments is not a mixture of their separate colours, but merely the colour of those prismatic rays which both of the pigments leave undestroyed, some colour, in fact, which is common to the colours of both of the separate pigments. But Mayer's views were plausible; they seemed obvious to the eye; the illusion they concealed was not easy to make so clear; they were adopted and laid down authoritatively by Scheffer, in his 'Art of Painting,' and by other writers; and, therefore, without any scientific examination, they were, and are to this day, received by people in general as undoubted truths, and form the foundation of that system of colour doctrine which is now taught even in our Schools of

Design, under the authority of the Department of Science and Art; and which also prevails on the continent.

After the lapse of another century, however, some accurate observations have at length been made upon the prismatic colours, which, though they have remained for now eight or nine years almost unnoticed by practical men, will, I doubt not, in future be regarded as having established the true theory of colour, and as having relieved the student in this department of art from the difficulty or impossibility of reconciling the requirements of a false or defective theory with the approval of a refined taste or a nicely discriminating eye. The experiments I refer to are those which were made by Professor James Clerk Maxwell, on the proportions in which different sets of three rays taken from different parts of the spectrum must be combined in order to produce the sensation of white, and will be found detailed in the Transactions of the Royal Society for 1860, to which I must refer those who would fully understand the process employed. They constitute a sort of trigonometrical survey of the spectrum, on a principle which determines the relations of the colours of all the prismatic rays to each other. These experiments were made with a refined apparatus, and repeated many times over by different observers, to ensure the correctness of the results; and they distinctly prove that three of the prismatic colours, namely, the best red, the best green, and the best blue, which occur near the beginning, the middle, and the end of the spectrum, when mingled altogether, produce white, like the mixture of all the prismatic colours; and when combined in pairs produce all the intervening prismatic colours in the full strength which they possess in the spectrum: that is to say, the prismatic red and green, when combined in different proportions, produce the prismatic orange, yellow, and yellow-green, which lie between them in the spectrum, and the prismatic green and blue, when so combined, produce all the intervening seagreen hues. Hence it is evident that all the colours in nature may be exactly imitated by mixtures of the prismatic red, green, and blue; and this is not true of any other three prismatic colours. If, for instance, we take certain proportions of the prismatic yellow, seagreen, and violet, we may be able to produce white by the mixture of all three, and we may also be able to produce a pale red by a mixture of the violet and yellow, a pale green by the mixture of the yellow and seagreen, and a pale blue by the mixture of the sea-green and violet; but we can never so produce the deep red, green, and blue, which strike the eye so powerfully in the spectrum. For those three prismatic colours exceed all their intervening colours in strength of hue, and therefore cannot be produced by mixtures of their intervening colours. It is because of their superior strength that when we look at a tolerably pure spectrum it seems, at first sight, to consist of bands of red, green, and blue, alone; and only on a more careful inspection does it appear that the red passes through a regular gradation of colours to green, and the green through another regular gradation to blue. Thus the natural judgment of the eye perfectly accords with the results of these refined philosophical experiments, and the observation of Aristotle, the first observer of nature whose writings have come down to us, and one of the greatest that the world has ever seen, that scarlet-red, green, and violet-blue, are the colours of the rainbow, has been confirmed, after the lapse of more than twenty centuries, by the refinements of modern science.

There is perhaps no better way of exhibiting the meaning of the numerical results obtained by Mr. Maxwell, than the curves which he used for that purpose, enlarged copies of which I have prepared to illustrate this paper.

In fig. 1 the positions of the colours of the spectrum are laid down in such a manner that the colours produced by mixing any two of them shall lie in the straight line joining those two. The form of the curve approaching to two sides of a triangle, whose corners are red, green, and blue, shows that the intervening prismatic colours may be produced by mixtures of these, as yellow by red and green; and the position of white being also marked indicates the nature of all other mixtures, as the light

green produced by mixing the colours at *e* and *i;* and also points out the pairs of complementary colours, namely those which lie in any straight line drawn through the place of white, as yellow and blue, at *d* and *l*.

In fig. 2 the relative intensities in which the colours of the best red, green and blue rays exist in every part of the spectrum, are indicated by the ordinates of the three intersecting curves. The italic letters in these two diagrams mark the places of the particular rays at equal distances apart, on which Mr. Maxwell experimented, the colours of which are described by him as follows:—

At *a*, red.	At *e*, yellow-green.	At *i*, blue green.	At *n*, blue.
b, scarlet.	*f*, green.	*k*, greenish blue.	*o*, indigo,
c, orange.	*g*, green.	*l*, blue.	*p*, indigo.
d, yellow.	*h*, bluish green.	*m*, blue.	*q*, indigo.

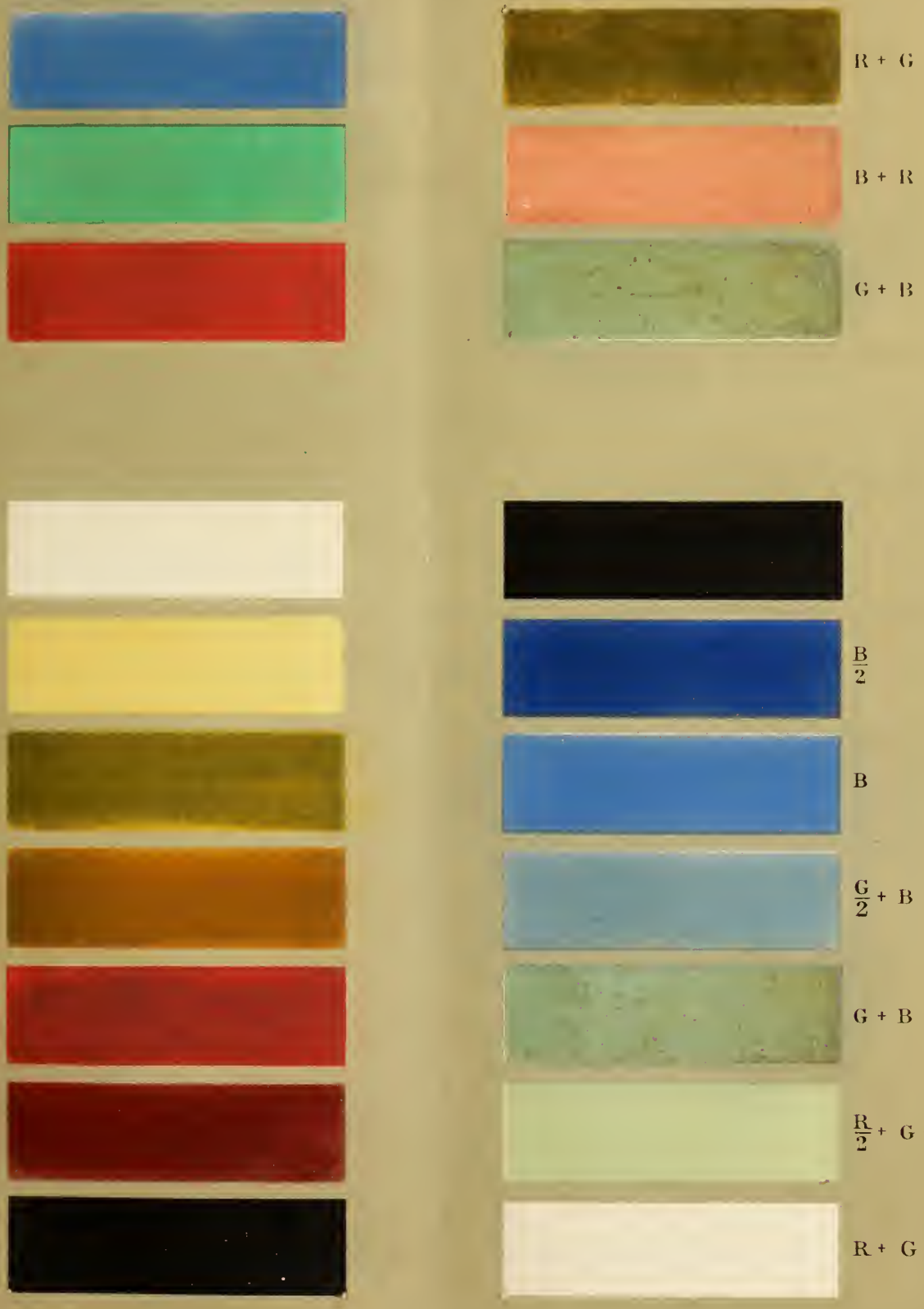
The capital letters in fig. 2 mark the places of the well-known Fraunhofer's lines in the solar spectrum, which serve to identify the rays experimented on.

From these facts, then, it is scarcely possible to doubt that the prismatic red, green and blue give the nearest possible approach to simple sensations of colour. What simpler explanation can be given of the wonderful sequence of colours in the spectrum, than that the eyes of all persons who possess the ordinary faculty of discerning colours* are capable of three colour-sensations alone, and that one of these, red, is excited most strongly by the less refrangible rays; another, green, by the rays of mean refrangibility; and the third, blue, by the more refrangible rays: intermediate rays exciting the first and second, or the second and third sensations simultaneously, with a more or less near approach to equality? But here it should be observed that these three simple sensations are not excited with equal depth, that is, with equal approach to purity, even by the rays which are best of each kind; the deepest in colour of the three rays is the blue, which is far the least luminous in proportion to its strength of hue; the next deep is the red, and the least deep the green. In other words, the prismatic blue is less diluted than the red, and the red less than the green. While, therefore, there is no evidence that even the sensation of blueness can be excited with perfect purity, it is certain that that of redness cannot, and still less so that of greenness. It is well to bear in mind these essential distinctions in the depth of colours, not only because they give the reason why so many blue and red pigments, flowers, and other coloured surfaces, excel in depth and power the best of a green hue, but also because, if I am not greatly mistaken, the depth of a colour is almost as important a consideration as the strength of hue, or even as the hue itself, in any composition of colours.

I will now pass on to the exposition of the colours produced by throwing together different continuous parcels of the prismatic rays, and excluding the rest, which seem to me to constitute a very interesting part of the science of colour. For the methed of exhibiting these, I must rely on experiments devised by myself. These colours are the most distant of all possible colours from that neutral gray, which is the mean or average of all colours, and are therefore the most striking colours that the eye can behold. This follows from the circumstance that the prismatic colours (which are all the best of their respective kinds) change gradually from one into another in every part of the spectrum; so that if we want the best possible colour of any given hue and brightness, we must collect the rays which fall on each side of that point in the spectrum where the given hue predominates, until we gain the given brightness; or if it be a mixture of red and blue, we must throw together rays from the two

* An extraordinary dichromic vision is more frequent than is usually supposed, in which yellow and blue are the only distinctions of hue, the red and green rays not appearing to differ in hue from the yellow.

DIAGRAM of the PRINCIPAL COLOURS, and some of their MEANS, as seen by the aid of a Prism.



W. Benson, inv^{t}

Lithog^{d} for the R.I.B.A. by Kell Bros Castle St Holborn E.C.

ends of the spectrum, omitting the rest. The colours of the most vivid pigments, flowers, or solutions, do not equal those of perfect continuous combinations of the prismatic rays, because no substance whatever sends to the eye all the rays of one part of the spectrum, and utterly destroys all the rest. It is, however, easy to see these beautiful colours by means of artificial combinations of the prismatic rays; every one, indeed, who has amused himself with looking at the edges of white and black spaces of different breadths through a prism has seen them: and the study of them is very instructive—I mean the intelligent study of them, not the mere bewildered admiration which they excite when their cause and their meaning is not known.

When we look at the spectrum of a broad band of white upon a black ground, the prism being parallel to the edges of the band, and held so near to it that a white space shall appear in the middle of its spectrum, we have in that spectrum, on its nearer side, a series of all the colours produced by adding together different parcels of the prismatic rays, beginning from the least refrangible or red end; and on its further side a series of all the colours produced by adding together parcels of the same rays, beginning from the most refrangible rays.

The first series begins with red, the deep dark red of the beginning of the spectrum; then brightens into the most intense red which the eye can be affected with (in that degree of light of course out of which the spectrum is produced) by the addition of all the red rays together. This then turns to a still brighter orange by the addition of the orange and yellow rays; then to a still brighter yellow, the most powerful the eye can behold, by the addition of all the green rays. This becomes a still brighter but paler yellow, like that of lemon-yellow paint, by the addition of the seagreen rays, and finally by the addition of all the rest of the rays (the blue and violet) it is converted into the full white. The observer cannot fail, however, to notice here three prominent bands of colour corresponding with the three of the pure prismatic rays, namely, (1), the red; (2), the yellow, produced by the red and green bands of the simple spectrum being thrown together; and (3), the white, produced by the red, green and blue bands of the simple spectrum being thrown together.

The second series begins with the extreme dark blues; which changes into full blue by the addition together of all the blue rays of the simple spectrum; then changes again into a brighter seagreen-blue, and still brighter seagreen where all the green rays are also added to the blue, and then to a still brighter but paler seagreen where the yellow rays are also added; and, lastly, becomes full white, where all the red rays also are included. Here, too, may be seen three prominent bands of colour—(1), the blue; (2), the seagreen, produced by the blue and green of the spectrum being thrown together; and (3), the white, produced, as before, by the blue, green and red of the simple spectrum being thrown together.

If we look at the spectrum of a broad black band upon a white ground, the same colours are of course seen, but reversed in position; the prism being held sufficiently near to leave a black space in the middle of the spectrum. All these colours are plainly combinations of different parcels of the pure prismatic colours, beginning always at one end or at the other end of the spectrum. This is easily seen, when we consider that the effect of the prism is to displace to different distances the several prismatic colours of which the white band in the one case, or the white ground in the other is compounded, thus causing different parcels of them to overlap each other.

If now instead of holding the prism at such a distance from the broad band of white that white is seen in the middle of its spectrum, we hold it further off, or if we look at a narrower band of white (which amounts to the same thing), we obtain combinations of limited parcels of the prismatic colours, beginning either from the ends, or from some points within the spectrum; and the further off we hold it, or the narrower the band is, the smaller the parcels of rays that are combined, and the nearer the

colours approach to the pure prismatic colours. The distance of the prism from the band may be easily so adjusted to the width of the band, that all the green rays are thrown together; and then we have the most vivid green the eye can behold; and the same adjustment will give us also very nearly the most vivid red and blue, so that in this spectrum we have the three primaries in almost their greatest strength—losing, indeed, somewhat of the depth of hue which they possess in a pure spectrum, but gaining more than they so lose in the strength they acquire by the addition of more light.

If we turn to the black band again, and either make it narrower, or put the prism at a greater distance from it, we obtain combinations of two limited parcels of the prismatic rays taken from the two ends of the spectrum, and it is not difficult so to adjust the distance of the prism in reference to the breadth of the band, that all the red rays shall be thrown together with all the blue in the middle, and produce the brightest and best pink which it is possible to present to the eye. The same adjustment will also suffice to throw nearly all the red and green together, and also the green and the blue rays, so as to give us the best yellow and seagreen, producing a beautiful series of the secondary colours, seagreen, pink and yellow, about twice as bright as the spectrum of primaries last described.

[Coloured diagrams of all these four spectra were exhibited, showing the gradations of their colours. In the plate accompanying this paper the chief colours in each of the same spectra are represented without the intervening gradations, which cannot well be printed. These are taken in the upper part of the plate, from the spectra of the narrow white and black bands, namely,—

Blue.	Yellow.
Green.	Pink.
Red.	Seagreen.

And in the lower part, from spectra of white and black edges (forming half of the spectra of the broad white and black bands), namely,—

White.	Black.
Light Yellow.	Dark Blue.
Yellow.	Blue.
Orange.	Seagreen Blue.
Red.	Seagreen.
Dark Red.	Light Seagreen.
Black.	White.

The constitution of each compound colour is shown on the margins.]

There is one grand advantage in these beautiful combinations of prismatic colours, which greatly increases their utility, which is that every one of the colours thus produced may at once be placed in juxtaposition with its perfect complementary colour, that is, the colour which added to it would produce the full white. For the colours produced in the spectrum of the black band upon a white ground are complementary to those produced by the spectrum of a white band of the same width upon black; and, therefore, if the black and white bands are placed together, end to end, the complementary colours are seen to admirable perfection, without a possibility of any mistake. In that case, it is easy to see, (as I have explained in my treatise on colour), that the opposite colours are really perfect complementaries; for if the white band is superimposed on the black band, its spectrum is superimposed on that of the black band, and the result is the full white. The best and easiest way to see these colours is to view through the prism the object cut out in white paper, laid over a dark cavity, whilst itself is illuminated, if possible, by the direct light of the sun. The prism should, of course, be opposite to the middle of the object, and parallel to it, and the refracting angle should be so directed that the spectrum deviates as little as possible from the position of the object. It should also be shaded from light, which might otherwise be reflected from its surface, and interfere with the view of the spectrum.

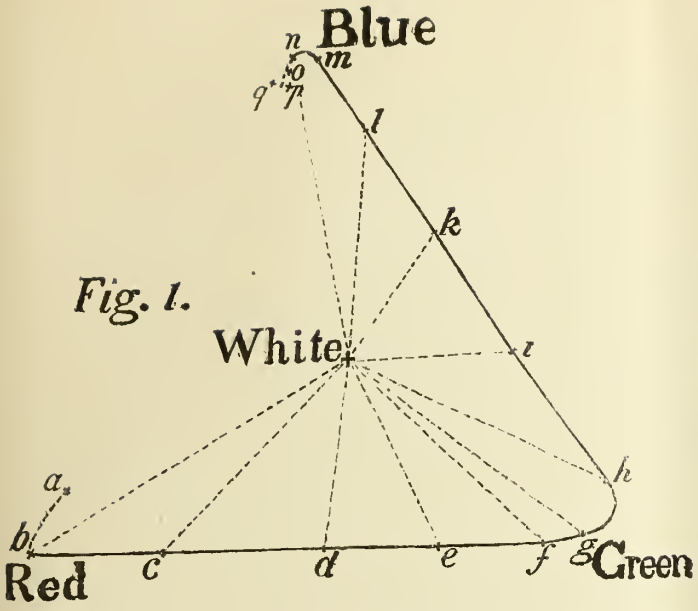


Fig. 1.

Fig. 2.

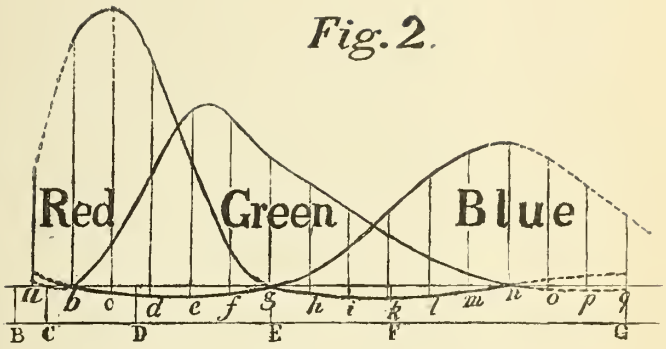


Fig. 3

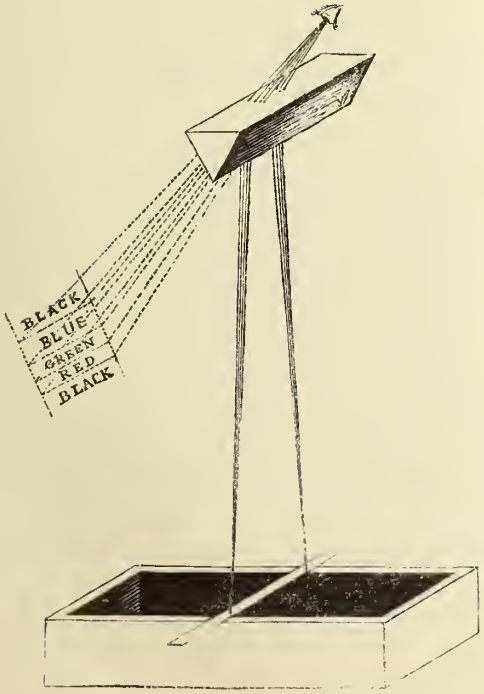


Fig. 4.

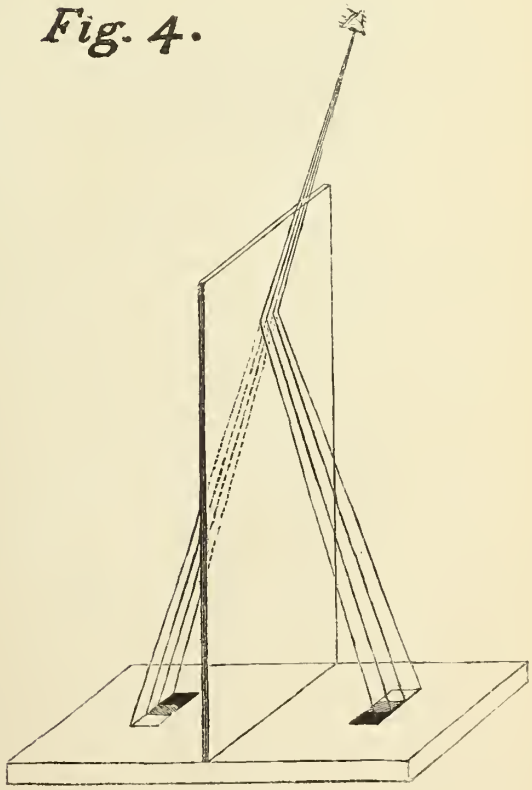


Fig. 3 is intended to aid those who have not been accustomed to use a prism, to place it in the proper position.

The principal prismatic colours and their combinations constitute the very alphabet of the science of colour, and are as essential to any intelligent acquaintance with it as the system of notation is in arithmetic, or the scale of notes in music. It is a most fortunate circumstance that we are able so easily to produce an invariable exemplar of colour, which, though not actually perfect (since even the colours of a pure prismatic spectrum, as I said before, are, in some degree, diluted or mixed), yet excel all others in depth; and are, therefore, the best which it is possible to find, to exemplify the nature of colours, and to teach the eye to distinguish, at first sight, the true complementary colours. How far the uneducated, or falsely educated eye is liable to err may be seen by taking the diagrams of primary colours, and their complementary secondaries, usually given in popular works on colours, and comparing them with the series of nature's painting. The former are in general so extremely diverse from the truth, excepting blue and red, that they scarcely present an approximation to it. Blue, for instance, is usually opposed to a very red orange, instead of to yellow; green to red, instead of pink; red to a warm or yellowish green, instead of to the colour which I have called seagreen—a colour that would, by some, be thought nearer to light blue than to green. When we consider how easily these colours are produced, how striking they are to the eye, how simple the explanation of them is, it is surprising that hitherto no attempt has been made to make use of them in educating the eye, to distinguish the true primary and secondary colours, by accustoming it to the inimitably beautiful productions of nature's unerring pencil. The student may see here in a moment how near the colour of a pigment is in hue to the true red, green or blue, or to their complementary colours; for nothing can be easier than to compare the colour of a pigment with any of these combinations of the prismatic colours. He may also see how far any pigment, though correct in hue, falls short of the standard of perfection in the depth or in the clearness of its colour. And there is no difficulty in learning how to use a prism; indeed it may easily be fixed in the right position, with the white and black objects of view, above described, so that the student will merely have to apply his eye to it whenever he would see the colours it produces. But, in truth, a very few inspections of these colours, and comparisons of them with the colours of pigments, will generally be enough so to impress them on his mind that he will have no difficulty in referring the hue of any bright pigment, afterwards, very nearly to its correct place in the whole circle of colour.

It will perhaps be objected, however, that in practice we have not so much to do with these deep and clear colours, as with the pale, dull and grayish colours, which are commonly designated tertiaries, though the one true and perfect tertiary is, of course, white, including in that term its every gradation in brightness, from black up to the most brilliant. There is much reason in this objection, because the weak hues of these colours, endlessly diversified as they are in strength, are not at all easy to identify, unless the eye has been educated aright in this point also. But here we see one especial excellence of the method I have recommended (which I regret to find I omitted to mention in my treatise); it is capable of being easily and perfectly adapted to the exhibition of these pale, dull and grayish colours also. Let a gray, darker or lighter, be substituted for the black parts of the figures to be viewed through the prism; all the colours of the spectrum will, of course, be diluted with white, and the more so the lighter the gray is made. Again, let a gray, lighter or darker, be substituted for the white parts; all the colours will be reduced in brightness accordingly. And if both these changes are effected at once, a darker gray being put for the black parts, and a lighter gray for the white parts, the colours being at once diluted with white and reduced in brightness, will approach to a pure gray, and the more nearly, the more nearly the two grays are alike.

All these variations are deserving of attentive study. To the decorator, for instance, what can be

more important than a correct idea of the real hues of those pale, dull or grayish colours which he so frequently uses to cover large surfaces; for though weak in respect of intensity, they are powerful in respect of their extent. He may wish to introduce their opposite hue, in small extent but great intensity, to balance them, or he may wish to relieve them by using some border of a similar hue in greater strength; but how can he do either with certainty unless he is sure of the nature of these weak hues? What means has he at present of learning? Supposing he knows the true hues of his bright pigments, he may, indeed, often make weak hues by mixing those bright pigments with white and black, and so judge of their nature; but it must still be very advantageous to be able to judge aright of such colours, independently of empirical methods; and for this, I think, no means so certain and so easy as those which I have endeavoured to point out.

The results which I have thus endeavoured to deduce from the study of the prismatic colours are fully confirmed by all sorts of experiments made with the colours of pigments. For instance, we may test the colours of pigments with the prism in a beautifully simple way. We have merely to cover a small part of a strip of white paper with the pigment, and view it over a dark cavity through the prism, and we see the spectrum of the pigment-colour adjoining to that of the white, and detect at once the rays which are absorbed or extinguished by the pigment, and those which it sends to the eye, to which its colour is due. Thus, with respect to yellow, which many will still maintain, I suppose, to be a primary colour, unconvinced by the experiments on the combination of the prismatic rays (which show that the best yellow is produced by throwing together all from the first red to the last green ray); if we analyze the colour of aureolin, of chrome yellow, or of king's yellow, or the petal of any bright yellow flower, we uniformly find that, the better and clearer the yellow, the more perfectly the object reflects all the red and all the green rays, absorbing only the blue. Hence, if blue is a primary colour, it is difficult to see how it can be supposed that a colour produced by all the other rays of the spectrum is not made up of both the other primaries combined, whatever those primaries are. Some strips of paper, coloured in parts with different pigments, will be found on the table amongst the objects for prismatic observation.

Again, we may determine correctly all the intermediate colours between any two given colours, and ascertain the accurate mean between two given colours, without the slightest difficulty or possibility of error, by the beautiful method which was first used by the celebrated Lambert in the last century, and which I have, in my late treatise on the Science of Colour, endeavoured to improve and apply to this purpose. We have merely to hold a slip of clean polished glass, perpendicularly, between spots of the given colours, so as to see the near spot reflected from that part of the glass through which we see the other spot, as shown in Fig. 4. If spots of white and black are placed opposite to each on alternate sides of the given colours, the position of the eye, in which half the light is reflected and half transmitted, is readily found, and the result there observed must be the mean of the colours. When the reflection is more oblique, the reflected light will be in higher proportion than the transmitted, and the contrary with a less oblique reflection.

Those who suppose that they can get the colours intermediate between the colours of two pigments by mixing the pigments, should compare the results obtained by that fallacious method with those obtained by this elegant and easy experiment. Gamboge and Prussian blue, for instance, make, by mixture or superposition, a green, darker than either the yellow or the blue of those pigments; the scientific method gives, as their intermediate colour, a gray of mean brightness, in agreement with the results obtained by our experiments on the combination of the prismatic rays. So, also, it does with the colours of king's yellow and cobalt, or lemon yellow and French blue or ultramarine.

If we avail ourselves of the well known property of Iceland spar to give double images of two coloured spots, and arrange the spots so that one image of both shall fall together, which is easily done, we obtain

the same results. And so, also, if we excite the sensation of the two colours in rapid succession on the same part of the retina, as by the well-known method of rotation. But neither of these methods are so convenient in practice as that of the slip of glass; and I only mention them to show that, in whatever way we can mingle two different colour-sensations, we obtain the same results. Small spots of the colours of vermilion, emerald green and cobalt, of verdigris, rose madder and king's yellow, with the requisite appliances, have been prepared for the purpose of illustrating these methods of finding their means; and any one who will examine the matter will see that the latter three pigments are very nearly complementary in hue with the former three; that is, the means between vermilion and verdigris, between emerald green and rose madder, and between cobalt and king's yellow, are very nearly neutral grays. The results of all our experiments with colours of pigments, therefore, plainly agree with those of our former experiments on the combination of the prismatic rays, and confirm the opinion that red, green and blue are the primary, and seagreen, pink and yellow the secondary colours.

In perfect agreement with the facts I have stated about the complementary colours, are all those apparent changes of colour which are perceived when the retina, having been strongly excited by some one or other colour, becomes less sensible to it than usual, and every object to which we direct the eye, appears, therefore, more or less tinged with the complementary colour, as if a wash of that colour had been laid over it. For it is always found that in an eye excited by red, by green, or by blue, objects appear tinged with seagreen, with pink, or with yellow; and the reverse; and that by intermediate colours, intermediate effects are produced.

I am aware that some of these effects have been otherwise described by several writers: it is usual, for instance, to hear it said red tinges the adjoining colours with green; but this is not correct, unless the one be a pink-red, or crimson, and the other a seagreen-green. So again, it is usual to say, that blue and orange mutually deepen each other; but for this to be true, the blue must be of a sea-green-blue or azure hue, and the orange must be yellowish.

The most careful experiments, made by looking stedfastly at spots coloured with those pigments which best represent the principal compounds of the prismatic colours, and brilliantly illuminated upon a black ground, and then suddenly directing the eye to a perfectly neutral gray ground, will always clearly show the gray surface darkened and modified in hue in accordance with what I have already pointed out as the real or natural complementaries. Thus, an eye affected with bright red or scarlet, like that of vermilion, turns the gray into a grayish seagreen of the hue of verdigris; one affected with green, like that of emerald green, turns it a grayish pink, of about the hue of rose madder; one affected with blue, like that of cobalt, turns it into a grayish yellow, of the hue of king's yellow, and the reverse. The same effects are seen in the shadows cast by a sunbeam which has passed through strongly-coloured glass, upon a gray surface otherwise illuminated by a neutral light; and in many other ways, if due precautions are used. And no doubt, the peculiar improvement in depth, which is evident in truly complementary colours when viewed in juxtaposition, the eye glancing rapidly from one to the other of them, arises from the same cause. It is evident, therefore, that the eye itself is so constituted as to agree in this respect with the deductions of science concerning the actual relations of colours.

The attempt to reconcile these obvious ocular effects with the common doctrine as to what colours are complementary to each other, has led some to regard the deep prismatic blue, which Newton called indigo, as being violet in hue, and the deep prismatic red as being an orange red. It is a great incidental advantage in the system I advocate, that it abides by the invariable colours of the spectrum as the standard by which all the colours of natural objects are easily tested: for if we

depart from these, we may widely alter the hues of our simple colours one way or another, and be quite uncertain what is right, having nothing but the general vague idea of redness, blueness, &c., to guide us. The terms used to distinguish colours are among the most indefinite in all languages; and the loose way in which they are applied, and the different meanings attached to them by different authors, would lead one to suppose that our colour-sensations are so different in different persons, and so variable in the same, that they are more fanciful than real, and that no certainty is attainable in them. Yet, in fact, if we except the comparatively few persons who are only capable of the sensations of yellow and blue, and those whose eyes are less sensible than they should be to red, there is a wonderful uniformity and certainty in the sensations excited by light. Only let the rays which enter the eye be the same in quality and quantity, and let the eye be in the same normal condition, without any present or very recent strong excitement, and we may rely upon the results being the same.

But the difference between the new doctrine and the old is more than a difference of terms, for the utmost latitude of interpretation cannot reconcile them.

In a diagram, intended to represent in its lower part the effect of three luminous beams, red, green, and blue, falling in partly overlapping circles upon a reflecting screen otherwise dark, I have endeavoured to imitate as well as I could the natural complementary colours, as seen in the spectra of white and black bands and edges, which perfectly accord with the ocular effects I have just alluded to. These coloured lights produce, where the red and green lights fall together, a yellow of double brightness; where the green and blue fall together, a seagreen of double brightness, and where the blue and red fall together, a pink of double brightness; and lastly, where all three overlap, a white of triple brightness. The upper part of the diagram, on the other hand, exhibits the effects of taking away from white the same three colours, as if by laying over the white, in three overlapping circles, transparent washes of some perfect seagreen, pink, and yellow pigments, producing red where the pink and yellow washes overlap, green where the yellow and seagreen overlap, blue where the seagreen and pink overlap, and lastly, black where all three overlap.*

By comparing the colours in this diagram with the commonly received primary and secondary colours, as shown in the accompanying large and small diagrams sold for the use of the Schools of Design, which give the best representation of them that I could find, the essential differences between the two systems are made very apparent. Except red and blue, which both admit as primaries, all the other colours differ materially. The middle primary is deep green in the one, and bright yellow in the other; the first secondary is bright seagreen in the one, and yellowish green in the other; the second is bright rosy pink in the one, and dark bluish purple, or even violet, in the other; the third is bright yellow in the one, and a very red orange in the other. In the one it is endeavoured to get all the colours as nearly as possible of their full strength, in which they must be as nearly as possible of equal strength, so as to neutralize each other in equal quantities. In the other, their strengths are supposed to be proportioned according to certain arbitrary rules laid down by Mr. Field upon no sound reason whatever, and which moreover are not and cannot easily be fulfilled. In the one, by the enlightened study of the prismatic spectrum, and the use of satisfactory methods of testing the hues and the strengths of the pigments used, we make a tolerable approach towards correctness, or at least can ascertain pretty nearly how far we err; in the other, by following rules which a mistaken theory derives from the results of mixing pigments, or superimposing coloured glasses (regardless of the fact, that such a process gives neither the sum nor the mean of their separate colours) not one of the pairs of nominal complementaries neutralize each other; for the red and green compound a dark orange yellow

* This diagram was an enlarged copy of one in the author's treatise on the "Science of Colour," page 14.

or citrine ; the yellow and purple produce a reddish mixture, and the mean between the blue and orange is a good purple—much stronger and better than that given as the colour complementary to yellow.

The comparison of the natural and conventional systems of colour seems to me to much be to the advantage of the former. There is a certain beauty in combinations of colour devised under the latter, such as those in the diagrams for the Schools of Design ; but this is attained without completeness of range or compass ;—without including the most powerful colours of all the several kinds, which surely ought to be included in a scheme for showing the relations of colours ;—and no reason is apparent in the included colours themselves why they should be placed in that particular order. The peculiar congruity of the true primaries in darkness and depth, and of the true secondaries in brightness and clearness, also tends to give, as it seems to me, a chastened richness and charm to any orderly combination of those colours, which must be essentially wanting in similar combinations of the conventional primaries and secondaries.

I think then I am not wrong in asserting that an approach to scientific truth will be advantageous to art, and that the best natural taste may be directed and improved by understanding and observing the laws of nature. In colour, however, true science has hitherto scarcely been in the field at all, and taste has in fact had the battle to itself, not only unaided by true science, but even misled by false or pretended science. No wonder, then, that writers on taste in colour should be inclined to repudiate science altogether ; and that Sir J. Gardner Wilkinson, for instance, in the beginning of his valuable work on that subject, should make such remarks as the following :—" Every one willingly admits the great utility of rules ; but we must first make ourselves masters of the subject, and be contented to seek for facts to guide us in their formation." . . . . " It is of more importance for the proper arrangement of colours to ascertain which harmonize in juxtaposition, than to occupy ourselves with abstruse questions respecting their properties, or the laws by which they ought to be regulated ; which, though they may display great thought and scientific knowledge, are here of little practical use, and which, like the constitutions of certain wise professors, appear as plausible on paper as they are impossible in practice. From facts and actual experience we may obtain something positive and useful : from theory nothing can be expected, so long as the subject itself is not thoroughly understood, except the most vague and contradictory conclusions."*

As to the impossibility of rightly treating red, yellow, and blue according to the same rules as primary colours, the same writer also well observes (pp. 61, 62):—" Though red and blue in juxtaposition have the appearance of purple, and yellow placed next to red gives it an orange hue, the same illusion is not caused by the contact of the other two primary colours, blue and yellow, and these do not look green when in juxtaposition, except in certain cases. Nor is the change then so marked as when blue and red, or yellow and red, are in contact. And this is one of many proofs that all the three primary colours are not under the same conditions in relation to each other. It is not therefore necessary to lay down the same general and invariable rule respecting the three primaries, that " in making new patterns or ornaments, red and blue should not join, nor yellow and red, nor yellow and blue," as though the three combinations were exactly similar, and subject to the same laws. For yellow and blue do not deceive the eye to the same extent as the others, when in juxtaposition. Nor has red with green the same effect as red with blue and yellow, and still less have red blue and yellow the same effect as these three colours when united in one "—that is, according to the theory which the author received, they have not the same effect as white.

---

* Sir J. G. Wilkinson on Colour and Taste, pp. 6 and 8.

Such anomalies as those noticed in this extract are the necessary consequences of an erroneous theory. Of course blue and yellow cannot be treated in composition by the same rules as blue and red: for blue is complementary to yellow, and not to red. Still less can yellow and red be treated by the same rules as yellow and blue; for yellow harmonizes with red, itself containing the full red in conjunction with the full green, whilst it contrasts as the opposite colour to blue. No wonder that red, yellow, and blue together have not the same effect as red and green together, nor yet the same effect as white; for the mean of the first combination is always reddish, and of the second yellowish, and neither of them white or neutral, whatever proportions are taken.

I believe, however, that if we dispense with false theory, and admit scientific truth, we shall lose these anomalies, and introduce no new ones. We shall be enabled to treat red, green, and blue under the same rules as primary colours, and seagreen, pink, and yellow under the same rules as secondaries, if only we bear in mind the differences in the depth and clearness of the pigments we use to represent them; these, of course, modifying the effects in a large degree. Two primaries of similar depth may please the eye when side by side, while the same two, equally true in hue but not alike in depth, may fail to do so. A great step will assuredly be gained, if we establish correctly the hues of the three simple colour-sensations, and of their complementaries. For these, together with black and white, will give us the eight principal colours upon which to work, and will enable us to determine all the intermediate colours correctly, and to arrange them all with due regard to their natural gradations and contrasts of every kind.

Did I not fear to exceed the limits proper for this occasion, and to stand in the way of that expression of the views entertained by others which I hope this paper will elicit, I would add some remarks on the true limits of colours in strength of hue, which, when ascertained with some approach to correctness, might be substituted with great advantage for Field's doctrine of chromatic equivalents; on their limits in depth and clearness; also on gradations and contrasts of colour, and on the means which I have proposed as a key or directory to the endless natural harmonies of colour; combinations of which, in one form or another, must be (if I am not greatly mistaken) the groundwork of all that naturally delights the eye in colour-compositions, and makes them praiseworthy as works of art.

In the hope of being able to describe what I call the Natural System of Colour, I prepared an enlarged copy of one of the coloured plates in my treatise on the science of colour, in which the same twenty-seven colours (that is, the eight principal colours with the mean between every pair of them) are arranged (as you see) in three different ways in groups of nine each, according to the quantities of the three primaries which they contain—the three on a black ground containing the full red, the full green, the full blue; the three on a light gray ground, half the full quantity of each; and the three on a white ground, no red, no green, no blue. I prepared also a large diagram in which the same twenty-seven colours, together with one mean between every pair of them—a hundred and twenty-five in all—are arranged in groups according to their absolute brightness or luminousness, from black to white, beginning with very dark primaries and ending with very light secondaries. They constitute a series of sections of a supposed cube of colours, at right angles to the diagonal drawn from the corner of black to the corner of white. The evident irregularity of the colours of these spots in brightness, depth, and clearness, much hinders the effects that ought to be produced in these diagrams; yet they may serve to show that those who know better than I do how to mix their paints and to handle the brush, might make such representations of natural harmonies on this system as would be worth the study of the artist, though perfection can never be attained.*

* The coloured diagrams referred to in this paper were exhibited by the aid of the ingenious magnesium lamp constructed by Mr. J. Solomon, of Red Lion Square—the brilliant whiteness of the magnesium light bringing out the colours nearly as they appear by daylight. It should be observed that the green on the chromo-lithograph facing page 110, is very deficient in richness and depth.

But time forbids to enlarge on these points; nor, indeed, would it be becoming in me to do so, without giving an opportunity for the statement of any objections which may occur to the novel doctrines I have ventured to advance.

I hope, however, that I have said enough to convince you that the views I have advocated are sustained by deductions from experimental science on every side, and give a promise of usefulness, whilst the points objected to in the common doctrine are not only destitute of such support, but are tainted with obvious and mischievous error, and that therefore the correction and improvement of our theory of colour deserves the consideration of all those who are interested in the advancement of art in this direction. It would afford me much gratification, if with your aid my attempt to introduce this reform should succeed, and especially if our country, which in matters of art has too often been content to follow at a humble distance the lead of the continent, should be first in removing from her public schools of art the reproach of ignorance in the science of colour.

Mr. G. J. Grace, Contributing Visitor, responding to the chairman's invitation to open the discussion, said,—You have called upon me, Sir, to make some remarks upon the very interesting paper which has been read to us. In doing so, I cannot but observe that it is an exceedingly difficult thing to speak upon a question that enters upon so many details. I fully realize the great talent, great perseverance and intelligence which have been brought to bear upon the system of colour advocated by Mr. Benson, but yet I must say he has failed to convince me, that green is a primary colour and that yellow is not. I have read his book carefully, and also the various letters he has written in which he advocates these principles, but I have failed to perceive any argument adduced in conclusive proof of his theory. After all, Mr. Benson addresses himself to the question of light, which is rather a different one to the question of colour. I will begin with this question of light. If we go to a southern clime we meet with a pure blue sky, we see that sky illumined by a yellow sun casting its yellow rays over the surface of the ground which it illuminates; when we see that sun as it sets casting its refulgent rays upon the ascending vapours of the earth, and giving a series of magnificent colouring, verging from the most brilliant gold to the most intense carmine and beautiful purple, how can we think that yellow is only a secondary colour. By means of the prism many most interesting experiments may be made, bearing intimately upon this question. I take a sheet of note-paper and looking at it at a proper angle through the prism, I find on the upper edge a space of about one inch of pure yellow, fringed at the top with deep red: then there is a broad blank of white, and at the bottom edge is a band half-an-inch broad of blue, fringed with violet. This I have copied faithfully in colour on the piece of paper I now exhibit. Now, if you see these colours so separated and so declared, it seems difficult I, think, to imagine that yellow is not a primary, but merely a secondary composed of green and red. Again, I take the prism, and look through a window upon a grass-plat: the window is divided by a sash-bar about an inch wide: the grass-plat terminates upon a white stone walk. The grass-plat as seen in the prism, has a yellowish green tinge, with a sort of opal effect of yellow and red and other colours upon the points of the blades of grass; and the sash-bar itself gives a most beautiful and brilliant line of deep blue above and of deep red below; when we come to the edge of the stone-walk there is a little line of carmine: next there comes the broad band of pure yellow: then a broad piece of white; and then the blue, precisely as shown on the sheet of paper. Leaving the abstract question of light, we come to the more practical question of colour. How can Mr. Benson's theory stand the test here? In considering harmony of colour we are accustomed to call certain colours primaries, because they cannot be compounded of other colours. We find that yellow, red, and blue, fulfil these conditions. We know that when these colours are mixed one with the other, yellow and blue form green, blue and red form violet, and red and yellow form orange. Hence orange, violet,

and green are called secondaries, and these three primaries, or the three secondaries mingled in due proportions, form tones of grey verging to black according to their intensity. I have here a coloured diagram showing yellow from gamboge, blue from Prussian blue, and red from vermilion with a little carmine; mingling these same colours, I obtain the green, the orange, and the violet as they appear, and all combined form the black centre. Here is another diagram following Mr. Benson's theory, showing green from emerald green, blue from Prussian blue, and red from the same colours as before. The green mingled with the red only gives a dingy purple, with no trace of yellow, and the whole mingled together form a less neutral black than that obtained where yellow forms a part. Next experimenting with transparent colours; I take various pieces of coloured glass; here are two greens (holding them before a lamp) one exactly resembling the other; one is green glass, the other composed by a piece of yellow glass placed over blue glass. I place light red glass over green glass, the result is dingy purple—you cannot obtain an approach to yellow. Thus you see that neither by the mingling of any known pigments, nor by the mingling of transparent colours, can green be proved to be a primary as affirmed by Mr. Benson in the paper read to us. It is asserted that it is so; but although theoretically advocated it is not proved. There are certain colours given by the prismatic spectrum which, commingled, form white light. Now we have to consider that though in this spectrum, as in the iris, the colours are so blended as to appear to the eye soft shadings of red, yellow, green, blue, and violet; yet the yellow is most of it formed into green by its strong affinity for blue. Probably there are only two fundamental colours in white light; yellow representing, as it were, the active or positive, and blue the negative principle. In conclusion, I think that before the present system of harmony of colour be set on one side, far stronger arguments and more direct proofs of the truth of the opposing theory should be advanced, more conclusive than what have been offered to us this evening. I state these opinions, hoping they may stimulate others to join in this discussion; but I by no means wish to depreciate the great talent and industry shown in the very interesting paper read to us by Mr. Benson.

Professor KERR.—Am I right in understanding the main difference between Mr. Crace and Mr. Benson, to be this:—that the one is dealing with the results of mixing coloured rays of light, the other with the results of mixing pigments?

Mr. BENSON.—Certainly; and I contend that a true theory cannot be formed from the results of such experiments as mixing pigments. Every pigment destroys those rays of light which do not produce its own colour.

Mr. CRACE.—Colour has a certain degree of absorption of light. The greater the intensity of colour, the greater is the tendency to the absorption of light. If you put the prism upon a black object you get a greater intensity of colour than if you put it upon a light object.

Mr. WM. WHITE.—I rise with the greatest pleasure to propose a vote of thanks to Mr. Benson for his communication. I have myself for a long time paid some attention to the study of colour, although not in the scientific and experimental way which Mr. Benson has done; but I wish to observe that his theory perfectly accounts to me for a conclusion which I came to very early indeed, viz.: that red, blue and green were much more harmonious than red, blue and yellow; and as regards Mr. Crace's observations with reference to the mixture of colours by means of glasses, and the question which Professor Kerr has asked, it seems to me to be perfectly explained by the fact that, by putting pieces of glass together in the way described, you have the blue and the yellow plus the black (*i.e.* through means of the shadows of the colour), and not plus the white. I do not say that explains it scientifically, but practically to me it would explain the fact that you cannot put together pigments in that way with the same effect as rays, because of their opaque nature. It is a body as it were of colour, instead of light; and it has been proved by all experiments hitherto made that it is impossible to mix pigments in the

same sort of way as you can mix the rays of light. Then, as regards the lighting up of scenery by the yellow rays of the sun, I think we must differ from Mr. Crace in that, because I believe the rays of the sun are rather what would be intense blue than intense yellow [Mr. CRACE.—I spoke of a southern clime]; and when the rays of the sun fall upon the evening sky, there is a secondary introduced which you had not before. I say I believe the rays of the sun give the blue element rather than the yellow. I know the rays of the sun form the actinic power in photography; and if you put yellow between the rays of the sun and that which you wish to produce, you simply have no effect, red would have about as little effect as the yellow; but blue rays, on the other hand, would rather intensify the effect. I would only further express a hope that on some future occasion Mr. Benson may be induced to carry out to practical illustration that which he has alluded to in his paper, viz. the limitations and harmonies of colours in accordance with the theory he has given us.

Professor KERR seconded the vote of thanks, pointing out again that Mr. Benson and Mr. Crace were really dealing with different subjects, the one with light and the other with pigments.

Mr. J. K. COLLING, Fellow, said—I have been in correspondence with Mr. Benson on this subject, and it appears that the great difference between his theory and that which is generally received is that he makes yellow a secondary colour and green a primary one. In my correspondence with him I have been endeavouring to point out that there is a certain phase in nature which shows that green is not a primary colour, but that it is formed of other colours; and I have brought before his notice the sky-green colour of sunrise and sunset. Mr. White says the rays of the sun are blue; but there is no doubt the rays of the sun are yellow. [Mr. WHITE,—Pure white, probably]. They are yellow. If you take a sheet of paper, and expose it half in shade and half in full sunshine, you will see that part which is in the sun light has a warmer colour than the other. More than that, in the evening, before the sun sets, by refraction the colours of the rays of the sun are exaggerated, and then become an intense yellow, and when the sun sets, where all is blue sky you may see gradations from yellow right through yellow-green, blue-green into the blue sky. What is it that causes that green in the sky? Is it not the mixture of the yellow and the blue? In the sheet of paper which Mr. Crace showed there is no green whatever. The top edge is blue and the bottom edge is yellow, and there is no green; but the way Mr. Benson produces the green is to reduce this to a narrow strip of paper, and then the blue overlaps the yellow and produces the green. You may do the same thing with the sheet of note paper, by holding the prism and turning it on its axis, by which you foreshorten the prismatic colours and bring the yellow into the blue, and you form the green. Again, with Mr. Benson's diagrams, when it is looked at straightforward you see the colours as they are shown here on the sheet of note paper. If you look at that diagram * you have blue in the one edge and yellow in the other, but place the diagram diagonally, and when viewed with the prism, where the colours intersect, there they produce the green again. Now again, look at a yellow piece of paper through the prism instead of getting blue, as in white paper, you get no blue; it will be green. To-night we are viewing everything in a yellow light; if you look through the prism now you will see no pure blue: it is all green, because it is tinged with yellow light, and therefore it is green you are seeing to-night and not blue. I ask what do you see—blue or green? I have put the prism into the hands of a number of persons and they have said "green decidedly." I brought before Mr. Benson's notice the formation of green in the leaves of vegetation. Everyone knows that when the bud first issues forth in spring that it is yellow, very slightly tinged with green, but it gradually becomes greener, and the more it is exposed to the light the greener it becomes, and the leaves most green and most blue-green are those longest exposed to the light. For instance, those which belong to ever-greens are usually darker than those of any

* The angles of two pieces of paper placed together so that the top edge of one is in a line with the bottom edge of the other.

other plant; as in the ivy, yew, and many others. That shows that the light does not colour the vegetation green but colours it blue; and the yellow, as it were the normal colour of the plant itself, is added to the blue and produces a green.* There is another thing—many plants and leaves, and fruits are covered with a bloom which is quite independent of and separate from the colouring of the plant itself. That bloom in every case is blue, not green. Take the leaves of the pink tribe. You are aware they are a very blue-green. If you take your finger you can rub off the bloom, and then it becomes from a blue-green a yellow-green, showing that the bloom has altered the nature of the green from a yellow-green to a blue-green by being deposited on the foliage.

The celandine is a little plant impregnated with an intense yellow sap, and therefore the leaves would naturally be of a very yellow green; but there is a coating over them which is of a blue character, and that blue is the outer skin or cuticle of the leaf. On splitting the leaf you may strip that off, and you see then merely the yellow green that is underneath, showing, I think, that the light acting upon the outer skin has made that bluer than the other part, and by that means affects the colour of the plant. Of course, if yellow is a compound colour, I think it is only fair that Mr. Benson should tell us what it is compounded of. I have asked him, and he says that it is composed of all the rays, from blue right away to red; or, in other words, yellow light is formed of red and green. How that can be I must say I do not understand.

Mr. Benson (in reply to the foregoing remarks) said.—With these pieces of glass I think I can explain Mr. Crace's difficulty. These blue and yellow glasses placed together in front of the candle produce a green, like this green glass, alone; the green being produced where the blue and yellow glasses overlap each other. You will observe that the green is much darker than the yellow or the blue separately. What causes this yellow we must first consider. The yellow glass absorbs or destroys the blue rays, but allows the greater part of the green and red rays to go through it. The blue glass absorbs the red rays and destroys them, but allows a great quantity of the green to go through and nearly all the blue. The two glasses together allow green rays only to go through, and that is the green you see when you place one glass over the other; but the same green is really in the colours of both the separate glasses. It is the same with all these cases. With regard to the remarks of Mr. Colling in respect of the green of vegetation, yellow and blue substances always have that effect, because the yellow substance allows the green rays to go through, and the blue substance also—unless it is of a very pure blue—allows some green to go through. This blue glass of Mr. Crace's is not so much a blue as a sea green.

Mr. Crace.—By daylight it is the most beautiful blue you can imagine; the yellow flame of the candle gives a greenness to it.

Professor Kerr (to Mr. Benson)—Have you any practical improvement in view with respect to the use of pigments as the result of your theory?

Mr. Benson.—I merely show the effects of combining the different rays of light. Mixing pigments does not give true results. Mr. Crace says you get the mean colour by the mixture of pigments, which I say you do not get. You only get some colour which is included in the colour of both of the pigments.

Mr. Wyatt Papworth.—I think in Field's experiments he came to the conclusion that a proportion of his primary colours, 3 of yellow, 5 of red, and 8 of blue, made a white. Has Mr. Benson the same kind of proportion with red, blue, and green?

Mr. Benson.—I consider we may take the red, blue, and green of the spectrum in about equal proportions. About the same luminosity of each produces white; at least the red and green rays are nearly equal in brightness; the blue are darker, but more intense in hue.

* It is a well known fact that a plant under yellow glass will not become green, in consequence of the glass stopping the blue ray.

Mr. WYATT PAPWORTH.—Rotating a circle of equal spaces of red, green, and blue, would that produce white?

Mr. BENSON.—If the pigments are equally strong in hue, but you cannot easily get them equally strong. It would make a grey and not a white. You would not get white, for that is adding the three colours together. You would not get the same white, as if you throw three rays of these coloured lights one upon the other. If I could throw three circles of red, green and blue light in equal strength upon a white screen, I should produce a very beautiful effect, as is here shown in my diagram, which represents circles of blue, red and green overlapping and producing white.

Mr. CRACE.—This can be tested by two prisms, by bringing the colour of one prism upon that of the other. Bringing the green rays of the one upon the red rays of the other, you neutralise the colours.

Mr. BENSON.—No; you would produce yellow.

Mr. WYATT PAPWORTH.—I recollect some experiments made by Professor Lewis on the same question, which shewed that he had gone through a large number of those described by Field which came to the same result, but in the proportions of 5 yellow, 3 red, and 8 blue.

Mr. BENSON.—Probably he did not use the same pigments. Field relied upon the thicknesses of his superposed coloured glasses, not upon pigments. You will find the description in one of his works.*

Mr. A. J. BAKER.—Mr. Benson's experiments appear to me to be perfectly compatible with the ordinary theory; that shewing the reversed spectra passed over each other is a confirmation of the received doctrine of complementary colors. Although I cannot agree with Mr. Benson's deductions, I consider his experiments are valuable and deserve to be carried further. For practical purposes, however, I am of opinion that the results obtained from mixtures of pigments, confirmed as they are by those observed in colored glass, are more useful than those exhibited by the spectrum.†

The vote of thanks to Mr. Benson having been unanimously adopted, the meeting adjourned.

---

* His 'Chromatography' (1835). On reference I find that he did not use coloured glasses, but hollow glass wedges, filled with a solution of sulphate of copper, for blue; with diluted liquid rubiate, for red; and with aqueous tincture of saffron, for yellow. When thin, these solutions give tolerably good examples of what I have endeavoured to show are the true secondary colours, seagreen, pink, and yellow. When thicker, they approach to blue, red, and orange. When very thin, their thicknesses may be adjusted so that all together shall be pervious to a nearly equal proportion of all the prismatic rays, in which case the resulting colour is a neutral gray. Field determined his chromatic equivalents by measuring the thicknesses of the superposed wedges where this result was produced. He doubtless supposed, as it seems some still do, that colour is something that resides in the object; and therefore assumed that the colour did not vary in hue with the thickness, but only grew stronger—the thicker and darker the solutions, the greater the quantity of colour; an assumption upon which it might be argued that three blacks would make the strongest white. Field's system of primary, secondary and tertiary colours, and their equivalents, has, in fact, sprung from a process of subtraction being mistaken for one of addition.—W. B.

† In comparing combinations of color produced by the spectrum with those of pigments, care should be taken to allow for the difference of the effects produced; complementary colors of the spectrum mixed together produce white light, while in pigments they result in grey or black. It is incorrect to speak of the spectrum producing any grey tone, for grey is a shade between white and black, which the spectrum cannot produce; hence one of the disadvantages in its use is that none of the neutral tints, neither russets nor browns can be shewn. Many difficulties arise from confusion in the names of colors. Vermilion is by no means a pure red, as it inclines strongly to yellow; while ultramarine and many of the brightest yellows are tinged with red; hence the impossibility of mixing them with satisfactory results. If crimson lake, Prussian blue, and gamboge are taken as the primary colors, although they are not absolutely pure red, blue and yellow, yet they form satisfactory mixtures, marred most perhaps by the opacity or milkiness of the gamboge.—A. J. B.

Royal Institute of British Architects.

At the Ordinary General Meeting, held on Monday, 1st March, 1869, Wm. Tite, M.P., President, in the Chair, the following Paper was read:—

MEMOIR OF JOSEPH BONOMI, ARCHITECT AND A.R.A.; WITH A DESCRIPTION OF SOME DRAWINGS OF HIS DESIGN FOR ROSENEATH, ERECTED FOR THE DUKE OF ARGYLL.

By Wyatt Papworth, Fellow.

The occasion of my occupying the attention of the Institute this evening with a memoir of one of our professional brethren who practised during the latter half of the last century, arises from the circumstance that our late esteemed honorary member, Mr. C. H. Smith, had often before his decease intimated to me his intention of presenting to this Institute a roll of Original Drawings by Mr. Bonomi (comprising those now before you) as soon as he had arranged them, and somewhat repaired the dilapidated condition into which they had fallen during the many years they had been in his possession. This is the fate of most architects' drawings if not at once bound up into volumes for preservation: to such a precaution I owe the opportunity of having studied, many years since, the original drawings made by William Wilkins, R.A., for the erection of the National Gallery; and I should gladly hear in whose possession are the two large volumes which contained them. Mr. Smith's last illness prevented his giving the drawings this necessary attention; but soon after his decease the family placed them in my hands; they have been cleaned and repaired; and I desired to take the advantage, while making the presentation in their name, to offer a biographical notice of Joseph Bonomi, the talented author of them. The foundation for this paper has been obtained from among the manuscripts in our library; it may probably have been read at some very early meeting, but no record is found to that effect in the minute books, nor has it been printed. As the present manuscript has received several interesting additions from the pen of Mr. Ignatius Bonomi, the eldest son of the subject of this memoir, and as I have been enabled to add other remarks, besides some notice of the chief structure from the memoranda or specification written upon the working drawings, my work for this evening may be accepted as a new contribution recording the "Life" of one of the chief architects who have practised in England; a good collection of these memoirs is still a desideratum in our language.

Joseph Bonomi was born in Rome on the 19th of January, 1739. The family from which he sprung held a good position in society; and his brother, Don Carlo Bonomi, was distinguished as a theologian, being Professor of Divinity in the College of the Propaganda. Others of his relatives have occupied, and now occupy, dignified stations in the Church and in the Civil Departments at Rome. The subject of this memoir received a liberal education in the Collegio Romano; and, choosing architecture for his profession, he became the pupil of the Marchese Girolamo Teodoli, a Roman noble of Greek descent, who from taste devoted himself to the theory and practice of architecture, and of whom it is recorded by Milizia (*Memorie*, Bassano 1785, ii, 257), that he took pleasure in selecting for his pupils young men of decided talent, at the same time zealously promoting their artistic improvement. Joseph Bonomi arrived in England in 1767, when about twenty-eight years of age, upon an invitation from the celebrated architects, the brothers Robert and James Adam, both of whom probably had

remarked the merit of the young architect during their visits to Rome. Robert Adam was staying in that city in 1756, and there made (it can scarcely be supposed without some assistance in so much work) most of the magnificent drawings contained in vol. 1 of the collection of works by those brothers, which is fortunately preserved amongst the treasures (too rarely ransacked by students) in Sir John Soane's museum. This was before Robert went in 1757 to Spalatro with the celebrated Clerisseau and two expert draughtsmen, who may be suspected to have been Zucchi and Bonomi. The other brother, James Adam, after working at Venice in the summer of 1760, went to Rome, where he was living in 1763. The original sketches for his design for New Parliament Houses, in vol. 7* of the same collection, were made during the interval; and at that time he visited Pæstum, taking with him Clerisseau and certainly Zucchi, if not Bonomi also. I must request you to remember the two words Pæstum and Zucchi in connection with later events in Bonomi's life. Just after 1767 the brothers Adam were building the Adelphi and Mansfield Street, and in 1778 they began the construction of Portland Place. I am inclined to consider that many of the beautiful drawings of internal decoration which occur in Sir John Soane's collection of their works, and many of the drawings for their great book, the two first volumes of which were published during the years 1773 to 1778, were special objects of Bonomi's employment, because the Register Office at Edinburgh appears to be the only great government work which was at that period under consideration in their office. Few architects have any notion either of the style or the merit of the polychromatic decoration which those drawings—especially of ceilings—offer to inspection. There is, however, no record of the period at which Mr. Bonomi quitted the studio of the Adams, and commenced business on his own account.

Among his earliest and most attached friends in London was the celebrated Maria Angelica Kaufmann, at that period in the full enjoyment of her fame and of its substantial rewards, being as much esteemed by the great and powerful as she was cherished by her brother artists, especially by Sir Joshua Reynolds: she was nominated one of the original thirty-six members of the Royal Academy. In 1775 Mr. Bonomi was married to her cousin and ward, Rosa Florini, and would seem to have paid a short visit to his native city, as hereafter noticed. Six years later Angelica married the Venetian artist, Antonio Zucchi, before she quitted England; to the last hour of her life she continued to cherish an affectionate regard for Bonomi and his wife, and to evince an unfaltering interest in the welfare of their young family. This affection for her relatives naturally prompted a wish to have them near her; and within two years after her return to Rome, Mr. Bonomi was induced (1783) to return to Italy, with his wife and three children, probably with some view to a permanent establishment in that country. Owing to the loss of a son, a residence at Rome became so painful to his wife, that in 1784 they returned to England; a tradition exists that Mr. Lambton, the father of the first Lord Durham, during his travels on the Continent, made the acquaintance of Bonomi and brought him with him to England. From this period we must consider Mr. Bonomi fairly engaged in the pursuit of his profession in the metropolis. During his visit to Italy he received the diploma of Associate of the Clementine Academy at Bologna, and was also elected a member of the Academy of St. Luke at Rome. On the 12th of November, 1789, being then fifty years of age, Mr. Bonomi was elected an Associate of the Royal Academy of Arts in London. As this circumstance is connected with a remarkable passage in the life of Sir Joshua Reynolds, it is noticed at some length by James Northcote, R.A. (*Life*, 2 vols. 1818, ii. 251) in his biography of that illustrious artist. The facts are briefly these: Sir Joshua, highly appreciating Mr. Bonomi's talents, was very desirous to have him connected with the Academy as Professor of Perspective. As a preliminary step, he endeavoured on more than one occasion to procure his admission as an Associate. In the first instance his endeavours were unsuccessful, owing to some informality. On a subsequent election taking place in 1789, the candidates being Mr. Bonomi and Mr. Gilpin, the votes of the Academicians were equally divided, but the election

was decided in Bonomi's favour by the casting vote of the President. This step having been gained, Sir Joshua was next solicitous to obtain for his friend the first vacancy of an academic chair. This took place in February of the following year (1790), and every exertion was used by the President to secure the election of Mr. Bonomi. A resistance was evinced to this by the Academicians, owing to some informality or misconception, and eventually Mr. Fuseli was elected by a considerable majority. Sir Joshua, imputing this result to a cabal, immediately sent in his resignation as President, and withdrew his name from the list of Academicians; but, after a full explanation of the circumstances, he consented to resume the chair, for which he received the authority of the King; but his *protégé* was never afterwards successful in obtaining a seat in the higher class of the Academy.

In 1804 Mr. Bonomi received from the Congregation of Cardinals entrusted with the care of St. Peter's at Rome, an honorary diploma, constituting him architect to that fabric. So long previously as 1776 he appears to have been consulted on the subject of the sacristy which Pius VI. proposed to erect as an appendage to that edifice. A copy of the design furnished by Bonomi on that occasion is in the possession of his family. The composition is singularly elegant and appropriate; and, had it been adopted, would have imperishably connected his name with that wonderful edifice.

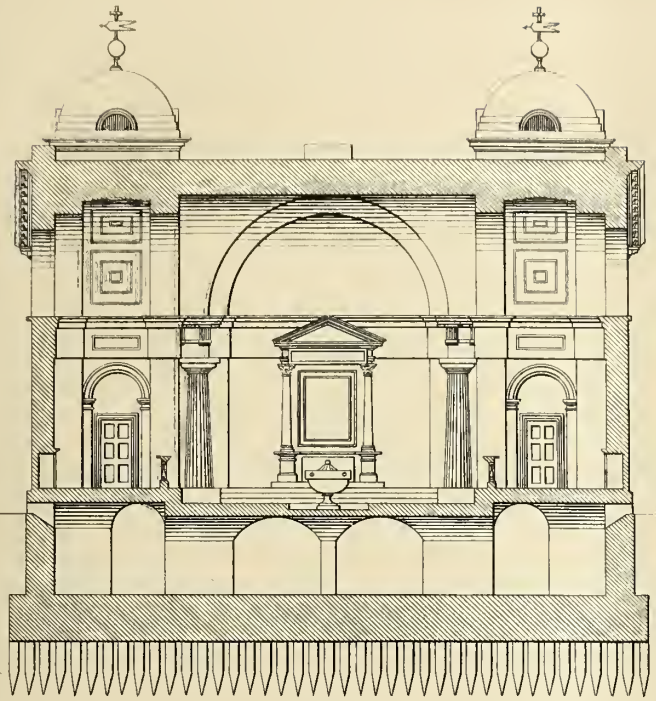
Though attached to England as the scene of his professional labours, and fully appreciating the patronage and friendship which his talent and merit had obtained for him in this country, Bonomi yet ever cherished an unaltered devotion to the land of his birth; the desolation of Italy by the French revolutionary armies, which involved many of his dearest friends and relatives in danger and suffering, was to him a source of deep grief and anxiety. After many years of eminence in his profession, Mr. Bonomi died in the midst of his family on the 9th of March, 1808, aged 69 years, and was buried in the Marylebone Cemetery, on the south side of Paddington Street, where a headstone with the following inscription to his memory still exists:—

D. O. M.
JOSEPHUS BONOMI
ARCHITECTUS PERITISSIMUS ROMANUS
CUJUS CINERES HIC JACENT
IN ANGLIAM VENIT ANNO M.DCC.LXVII
ATQUI ILLIC PLURIMA ARTIS SUAE
MONUMENTA POSUIT.
VIR PROBUS PIUS,
ET AMICITIAE CULTOR DILIGENTISSIMUS.
ACADEMIAE REGALIS LONDINENSIS
SOCIUS AB ANNO M.DCC.LXXXIX.
VIXIT ANNOS LXIX
MENSEM I DIES XIX.
DECESSIT DIE NONO MARTII
ANNI REPARAT. SALUT. M.DCCC.VIII.
MOERENTES UXOR FILII ET FILIAE
LAPIDEM POSUERUNT.

ANGELICA ET PETRUS
EJUSDEM FILIA ET FILIUS
QUI AB HAC VITA
TENERO AETATIS PERIODO DECESSERUNT
PATRIS CINERES COMITANTUR.

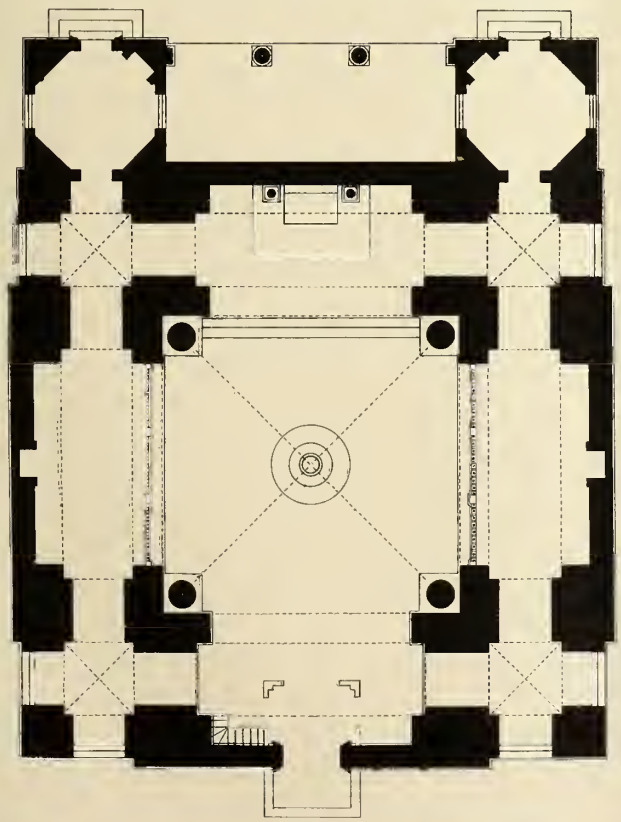
His attached friend and relative Angelica Kaufmann, had preceded him to the grave by a few months only, having died at Rome, on the 5th November, 1807. Mrs. Bonomi lived only a few years after her husband's decease. Of their numerous family, three sons and three daughters survived their parents. One of the sons is since dead: the eldest surviving brother, Ignatius, practised for many years as an architect at Durham, and retired from the profession a few years since: Joseph, the younger brother, embraced the profession of a sculptor, and was the pupil of Joseph Nollekens; he subsequently resided several years in Egypt and Syria, ardently engaged in the study of the ancient monuments of those interesting regions; and is now known to us, more especially, as holding the important and trustworthy office of curator of Sir John Soane's Museum.

Having thus noticed very briefly the general tenor of Bonomi's life, I shall now mention a few of the more important works executed or designed by him. Of these, a complete list cannot be supplied; but it is a source of much gratification that on such an occasion as the present, so large a number of his original drawings could be brought together, by means of which the character of a design can be so much more satisfactorily conveyed to the mind than by the verbal description of even the most practised writer. In 1784, the year of his return from Rome, he made a design for a country residence, Dale Park, in the parish of Madehurst, in Sussex, for Sir George Thomas, Bart.; in 1826 it was in the possession of John Smith, Esq., M.P. It appears to have been completed in 1788; a view is given in Neale's *Collection of the Seats of the Nobility*, (1828, second series, vol. 5) who states "that from its numerous and well-arranged apartments, it may justly be considered one of the finest and most commodious seats in this part of Sussex." The house is of a plain Italian style with a colonnade along the chief front, the body of which presents seven windows, and there is also a wing at each side of lower height with two more in each. In 1786, he made a design for the Library at Lansdowne House, Berkeley Square; the existing edifice, however, is from the hand of George Dance, junior; Bonomi's design, an interior view, was subsequently exhibited at the Royal Academy, in Somerset House; this drawing being now in the possession of his grandson Mr. George Goldie, one of our members, he has kindly sent it for our inspection this evening; it is an elegant composition in a pure style of Italian architecture and a brilliant specimen of interior perspective. In 1789, a design for a Gallery to have been erected at Townley Hall, in Lancashire, was made for the late Charles Townley, Esq., to contain the celebrated collection of Sculpture now in the British Museum. This elaborate drawing, likewise in the possession of Mr. Goldie, presents an interior of elliptical form crowned with a vaulted ceiling and lighted from the centre of the vault. The floor and walls are entirely covered with various coloured marbles, and the vault painted with arabesques on a light-red ground; the whole exhibiting a beautiful and harmonious specimen of polychromatic ornamentation. There are beautiful specimens of Roman vaulting in Giambattista Piranesi's work, which may have suggested to Bonomi's mind this constructive form of cupola. In that year also, he made designs for the restoration and completion of Sutton Place, Surrey, for, I presume, John Webbe, Esq., who took the surname of Weston (the name of the original owner of the property) on the devise of the estate to him in 1782. The proposed elevations of the east and south fronts still remain hanging in one of the upper rooms of that house, and were projected in consequence of the proprietor having pulled down the tower gateway with its wings forming the front; for this structure was originally a quadrangle: it is one which is, no doubt, well remembered by the members as exhibiting the very interesting example of the use in 1530 of brick and terra-cotta work in England. At this period (1789) Bonomi appears to have been fully engaged in practice, for in the same year, Longford Hall, Shropshire, for R. Leak, Esq., was undertaken by him. This mansion (as seen in the perspective view lent by his son, the landscape of which was put in by the celebrated J. M. W. Turner, R.A.) presents a front of good proportions, having in its centre a portico of sufficient projection

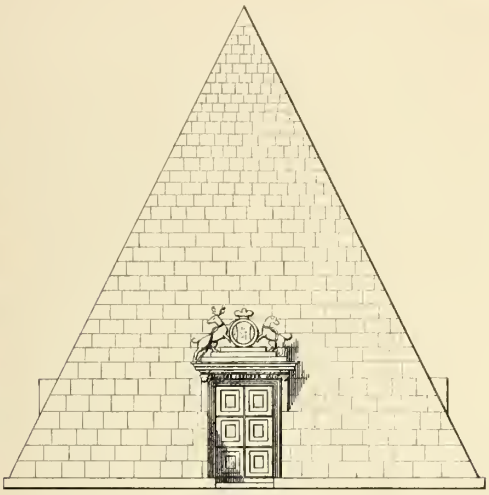


SECTION

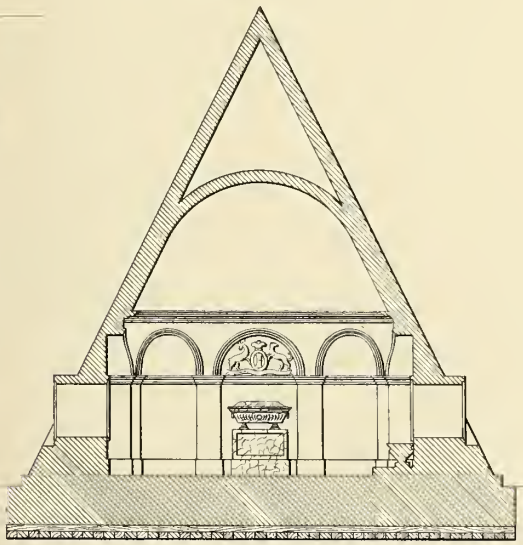
PARISH CHURCH AT GREAT PACKINGTON, WARWICKSHIRE.
ERECTED FOR THE EARL OF AYLESFORD, 1789-92.



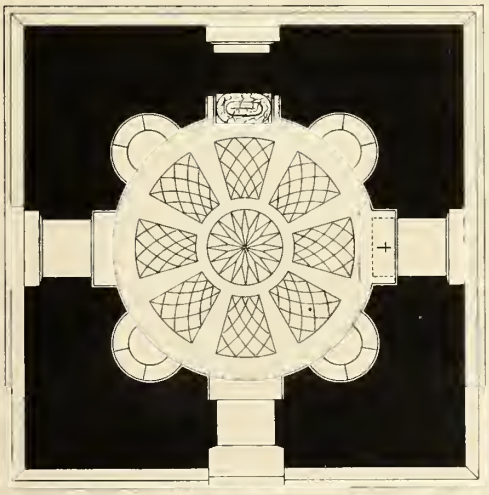
PLAN



SOUTH FRONT



SECTION FROM WEST TO EAST



PLAN

MAUSOLEUM ERECTED TO THE MEMORY OF THE EARL OF
BUCKINGHAMSHIRE, BLICKLING PARK, NORFOLK, 1794-96.

Joseph Bonomi A.R.A.
16, Great Titchfield Street

10 5 0 10 20 30 40 50 FEET

Lithographed for the R.I.B.A. by Kell Bros. London, E.C.

to allow carriages to draw up under it; this instance is perhaps the earliest adaptation of the portico, too often an unmeaning ornament, to that useful purpose. The edifice was completed in 1792. Two other designs were also commenced in that year: a gallery at Great Packington, in Warwickshire, the seat of his early friend and zealous patron, Heneage Finch, Earl of Aylesford, to whose bounty the parish was indebted for their Church, also built by the subject of this memoir. Mr. Ignatius Bonomi has favored me with a tracing of the drawings of this very interesting structure, (*see* Plate), and has lent a good perspective view of the interior colored in Indian ink, with some other drawings of the edifice, which should have more particular notice then I am able at present to give, as the whole building is solidly constructed in stone without either wood or iron. Its form is a Greek cross enclosed within a square; the central portion is groined and rests upon four columns resembling some of those at Pæstum, which from their massiveness appear well adapted to support the vault. The interior is arranged to produce a grand and harmonious effect; it is lighted by three windows of a semi-circular form, concentric with the great vault and springing at a considerable height from the floor; the effect obtained by this admission of the light is said to be exceedingly beautiful. The exterior also exhibits much architectural character though of a plain description; it manifests the interior form with that remarkable fidelity which is a great merit in the opinion of some leading critics, and so often declared to be now rarely found. Each front is surmounted by a pediment flanked by small cupolas over the lower vaulting of the corners. The measurement of the building outside is 61 feet 6 inches square. The first stone was laid 23rd April, 1789, by the Earl himself; and the building was completed in 1792.

In 1790 his design for a Saloon or large Drawing room for Mrs. Montagu, in Portman Square was exhibited at Somerset House. This carefully executed colored perspective is lent by Mr. Bonomi, together with a small drawing of it in Indian ink. In the same year, Mr. Bonomi designed and superintended considerable additions to Langley Hall, in Kent, the seat of Sir Peter Burrell, Bart. In 1792, he erected the Chapel for the Spanish Embassy, in Spanish Place, Manchester Square; it is a building of moderate dimensions, about 55 feet long, 21 feet wide, and 27 feet high; the interior presents a graceful composition of nave and aisles; the Corinthian colonnade supports a vaulted roof, and the nave terminates in a sanctuary in which a somewhat richer, yet chaste, style of decoration is introduced. Originally it had no architectural pretensions externally, but about the year 1846, a campanile of good design was added by our fellow Mr. Charles Parker. At this time, 1792, John Vardy, an architect attached to the Board of Works, had been commissioned to design Uxbridge House, Burlington Gardens, for the Earl of Uxbridge. It appears that he was assisted in the disposition of the south front by Bonomi; it is engraved in Britton and Pugin's *Public Edifices of London*, (1825, vol. i. p. 80) in which publication the writer of the account of the edifice makes the following critical remarks:—" On an inspection of the plans of this building, it will be evident that some particular and favorite object governed the arrangement of the whole design, in addition to the momentous one of aspect, and the advantage of view, which the spot afforded to the southward over the Burlington and Melburne Gardens. This arose from his Lordship's highly cultivated taste for music; and the object was to afford the means of its enjoyment, and to provide for the accommodation of his friends, who participated with him in a love of this elegant and scientific amusement, but without trespassing too much upon the family apartments. The architect's attention to this point is not only evident throughout the plan, but also that it tended to confine the architectural embellishments almost exclusively to the south elevation, converting that into a mere façade,—an error into which the architecture of the metropolis had fallen, but which cannot be too severely censured. Uxbridge House, therefore, like all insulated houses so circumstanced, appears to be an unfinished one, caused either by the consideration of expense, or the unwillingness of the architect to encounter the difficulties of adjust-

ing the external proportions and embellishments to the disposition of his plans—difficulties that were certainly great in this instance, but not superior to the power of the architect to contend with and to overcome; and being neglected, the spectator views this otherwise admirable mansion with a feeling that it is less dignified than it might have been, and he leaves it with the regret that it has not been carried so far as to become altogether a fine example of art, when so much was done towards it, and so excellent an opportunity afforded by its magnitude and situation. The façade exhibits the fact of the architect's endeavour to accommodate a greater number of windows than the length of the building would properly admit, for the parts are all narrower than just proportion requires; and pedestals are resorted to in aid of the pilaster's length, whose height would otherwise have required much greater width, and consequently more ample piers, in the rusticated basement by which the order is supported. It was, possibly, on this account also, that the modern practice of placing an aperture in the centre of all elevations gave way to the pilaster that now occupies its place: it might, however, have been the result either of his judgment or his research, for it was invariably the judicious practice of the ancients in their temples, to place the pillars of their lateral intercolumniations in odd numbers; for, wishing to give a peculiar dignity to the portico, they carefully prevented the peristyle from demonstrating a centre, thereby preventing, in part, a conflict with the importance of the entrance, in which a centre was assiduously marked by its intercolumniations, its pediments, and its portals." These just remarks are the words of my father, written very nearly fifty years ago; and it may be doubted whether the views of sound criticism have advanced a further stage after all the essays that have been since written. The employment by Bonomi of a central pillar or pilaster will again be brought under your notice in the subsequent portion of these remarks.

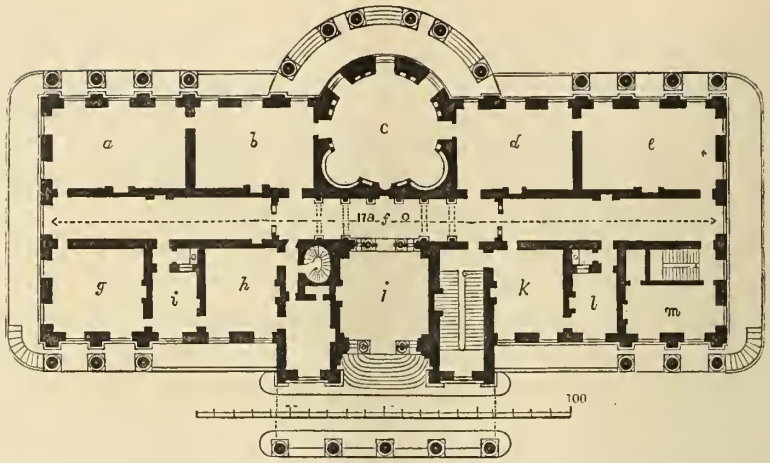
From 1793 to 1799, Mr. Bonomi was engaged upon the construction of Eastwell House, Kent, for George Finch Hatton, Esq., the father of the present (1843) Earl of Winchelsea. It is a mansion of considerable extent and of noble proportions. In the following year (1794) he designed a pyramidal Mausoleum in Blickling Park, Norfolk, to the memory of John, second Earl of Buckinghamshire. This mausoleum (*see* Plate) contains an elegant chapel, vaulted in the hollow of the pyramid. In 1795 a house for R. Knight, Esq., in Warwickshire; and in 1797, a mansion at Laverstoke, near Whitchurch, in Hampshire, for Henry Portal, Esq., were carried out; and between 1798 and 1802, he was engaged upon the erection of various offices, with additions, to unite the old east and west wings, at Lambton Castle, in the county of Durham, for the Earl of Durham. This mansion was further enlarged and completed by Mr. Ignatius Bonomi, and now presents a magnificent appearance in its towers mounting one above the other, being itself placed on a height above the river Wear. Of late years it is said to have suffered much damage from the works carried on in excavating the seams of coal beneath it. A view from the pencil of Mr. Thomas Allom is given in Rose's *Durham Illustrated* (4to. London, 1832). He also erected houses at Sandling, near Hythe, in Kent, for W. Deedes, Esq.: a noble Saloon paved with marble, and an elegant winding Staircase at Piercefield, near Chepstow, Monmouthshire, for Sir Mark Wood, Bart.: and exhibited designs in 1809-10 for intended improvements to Skelton Castle, Yorkshire, for J. Wharton, Esq. Mr. C. H. Smith noticed at one of our meetings (Session 1855-56, p. 11) that a house erected by Bonomi at Brighton, for Mr. Prince Hoare, the well-known art-critic of the end of the last and the beginning of the present centuries, had the joiner's work only varnished; it was in a very good condition many years afterwards, and the varnish had acquired a dark rich colour.

One other of Bonomi's carefully made drawings presents a section of St. Paul's Cathedral placed within that of St. Peter's at Rome, exhibiting their relative sizes. Many more drawings for the buildings I have described, together with others of designs as well those executed as not, are still in

the possession of his sons. Among the thirty-seven drawings which have been presented to-night to the Institute by the family of our regretted friend Mr. C. H. Smith, are five sheets, comprising seven plans, an elevation, and two sections, which exhibit a very chaste design for, apparently, an extensive Sepulchral Memorial, consisting of catacombs in the basement and of three square domed chapels, placed one above the other, and having a circular staircase in each of the four massive angle buttments. The stories have on each front a large open arch flanked by coupled columns of the Doric order 5 feet 6 inches diameter to the lower story; coupled engaged three-quarter columns of the Ionic order to the middle story, and pilasters of the Corinthian order to the top story. The design is figured 93 feet square on the plinth under the lower columns, and is figured 203 feet high to the upper member of the crowning balustrade, and with an additional height of 30 feet to the top of the pedestal which surmounts the whole design. It shows evidences of having been very thoroughly considered, the elevation being carefully figured in all its parts as if for execution, and the steps in each height of staircase quoted with great exactness in number and dimension. The drawings are executed with bold ink lines, on very coarse paper, as we should now consider it; the section taken through the angles of the edifice showing the two sides of each chapel in a foreshortened manner, is well worth careful inspection. Mr. Bonomi's family are not aware for what purpose this design was prepared so elaborately, even to the dimensions; but it is scarcely possible that it can exist unknown to them, in execution, either abroad or at home.

The remainder of the drawings, twenty-seven in number, arranged on nineteen sheets, consist of plans, elevations, sections, and some few details, relating to the celebrated villa at Roseneath, in Dumbartonshire. This, Bonomi's last design carried into execution, is also his best known work. In 1803 the then Duke of Argyll commissioned him to make a design to replace the old house which had been burnt to the ground in the beginning of the previous year. This graceful building was erected in about three years, but some of the apartments continued incomplete till at least as late as 1822. We are more fortunate in respect of illustrations of this edifice; for not only have we many of the original working drawings before us, but a plan was engraved in the "Treatise on Civil Architecture," written by the well-known Thomas Telford for Brewster's *Edinburgh Encyclopædia* (p. 651, plate 181), wherein it is given for "an example of modern design." A good perspective view of the chief front is also engraved in Neale's *Collection of Seats of the Nobility*, (vol. 6). These two illustrations had just been engraved for my additions to the section "History of Architecture," in the new edition of Gwilt's *Encyclopædia*, when these drawings before us were placed in my hands: Messrs. Longman, the proprietors of that valuable publication, have kindly lent the blocks to illustrate this memoir with Bonomi's *chef d'œuvre*, the woodcuts will thus afford an opportunity for realising a somewhat more detailed description of the edifice than would have been desirable without such aids to interpret the words.

The plan of Roseneath consists of a parallelogram 184 feet in front by a depth of 66 feet, four stories in height, the basement being sunk in the ground. The entrance front, placed towards the north, consists of a *five*-columned portico, projecting 15 feet 6 inches clear between the shafts of the columns, which are 3 feet 2 inches in diameter, 10 feet 10 inches apart, and having a recess under for the ten steps leading up to the entrance door. On each side are three windows 5 feet 6 inches wide, and the angles are ornamented with two similar windows between three detached columns having pilasters behind. Each end façade has five windows without other decoration. The south front has a bold circular portico of six columns, behind which is the library; two windows on each side; and three windows between four detached columns with pilasters at each of the angles.



The rooms are arranged on each side of a central passage 178 feet long, by 11 feet wide, lit at both ends, being to the east and west. The north side has (*j*) the entrance hall, which is groined, 25 feet 6 inches square, with (*h*) the Duke's bed-chamber, dressing room, (*i*) ante room and (*g*) study; on the other half are the principal staircase, (*k*) a bed-chamber with a (*l*) dressing room, and (*m*) the butler's pantry, with a back staircase leading also to an entresol over the last room. To the south is (*c*) the library in the centre, 29 feet 6 inches diameter clear of the bookcases; (*b*) the drawing room, 31 feet 6 inches by 22 feet, and (*a*) the music room, 36 feet by 22 feet. On the other side of the centre are (*d*) the billiard room, and (*e*) the dining room, of similar dimensions. The basement, consisting of the usual offices, was intended in the first instance to be lit only by an area of 5 feet 7 inches wide in the front and rear, and 10 feet wide at the ends, as shown in the woodcut. To this arrangement an addition was subsequently designed for cellarage at each end; and this was also enlarged by a design for a much more extensive open sunk courtyard at each end, semi-circular in form, with arcading; the yard at the east end having an opening into a vaulted "Street," 156 feet 9 inches in length, leading to the sea, as a covered means of access for bathing, &c., from the house. The engraving, from a view made about 1820, would tend to show that these later suggestions had not been carried out. The first floor consists of the central "gallery," and of the butler's bed-room and nine other chief bed-rooms, each with a dressing-room, nearly all of these having a large closet or "wardrobe," as it is called on the original drawings. The upper floor, which does not show on the exterior, and the curb roof of which is set back 5 feet 2 inches from the inside of the balustrading, consists of a central "great passage," from which sixteen bed-rooms and several closets are entered. Over the library rises a Cupola; it contains a large bed-room, with a dressing-room, a closet, and a staircase giving access to the first floor.

The north or principal elevation exhibits the portico of five columns, 30 feet high, the shafts being 25 feet, bearing a Corinthian capital with one row of leaves. The entablature is 7 feet 6 inches high with modillions; over it is a balustrade 7 feet high, behind which are the dormer lights, the total height from the ground being 51 feet. The windows, to each of the two floors have plain moulded architraves. The chimnies are finished as plain shafts with a simple coping-stone. The basement is 12 feet 9 inches high in the clear; the principal floor, 16 feet 6 inches high; the bed-chamber floor 12 feet high; and the garrets 9 feet 6 inches high. The south elevation exhibits similar features, as already described, and is crowned by the circular building or cupola, which is 23 feet high above the balustrade, and is divided by decorated windows with plain niches between them. The end elevations require no further description. It is specially noticed on the drawings that "it has been thought proper to elevate the building both for appearance and convenience, especially of the Offices

below; so six steps of 6 inches each will ascend to the south front; and ten steps to the north front, the ground being lower there, than on the south side;" and directions are added for sloping the ground

on that side to prevent the wet lodging against the south front. Bonomi placed the Offices of this country residence in the basement; as the advantages or disadvantages of so placing them was under discussion at one of our late meetings, I will make no comment on their position.

The other drawings, now submitted for your consideration and acceptance, show alterations that were made to the first design. These are near the servants' hall, consisting of an oval stone staircase, with re-arrangement of rooms adjoining, a cold bath-room in the basement; and a vaulted strong room on the ground floor, with a vaulted "intersole" over it, having an inner iron door and frame to it, probably as muniment rooms rather than as plate-closets. A large plan exhibits the arrangement for the sunk court at each end of the house, as already noticed, with the entrance from one of them to the subterranean street to the sea. Another large plan exhibits the ground-plan of the "New House," showing the proposed enlarged areas or courts, 58 feet 6 inches clear semi-diameter, forming a noble addition at each end. Another drawing exhibits these additions in the basement, showing the system of arcades or vaults around them—the steps up to the surface of the ground—the "dead area," or "dry area," 3 feet 9 inches wide on the south front, and 3 feet 9 inches to 5 feet 3 inches wide on the north front, with walls 18 inches thick;—the lines of drains—and also the "Subterranean Street," 11 feet 9 inches wide, formed into a series of arched vaults, each also 11 feet 9 inches long, and 18 feet 9 inches wide, including the curve to resist the pressure of the ground. This street is figured 156 feet 9 inches long from the back of the arcades or vaults, but the drawing does not now show the termination of it next the sea.

Telford in giving this edifice "as an example of modern design," adds that it "displays originality of genius and a disposition to simplify truly laudable." He notices that the principal staircase, 32 feet by 12 feet, has its access ill-arranged and is too confined; the back stairs is placed inconveniently at one extremity of the passage; "the entrance portico consists of five columns, which would be an absurdity if the driving way was not designedly along the front and under the portico; and that the front stair (the steps up to the entrance door) had better have been straight than elliptical." Not only does the entrance portico project to cover carriages from the inclemency of the weather, but it is the more remarkable as consisting of five columns only, a column being placed in the centre of it, the better, it is said, to express that the portico is intended for the protection of carriages, and not for a grand entrance, when a central space would necessarily have been required. There being no pediment, a support is also obtained by the use of the column for any appropriate sculpture. This heresy, as unthinking critics might call it, of a central column is also exhibited at the wings, where three columns decorate the angles of the façade but with a different intention. Another instance of such a treatment of a façade by this architect, has been already commented upon; and perhaps but one other in Great Britain can be

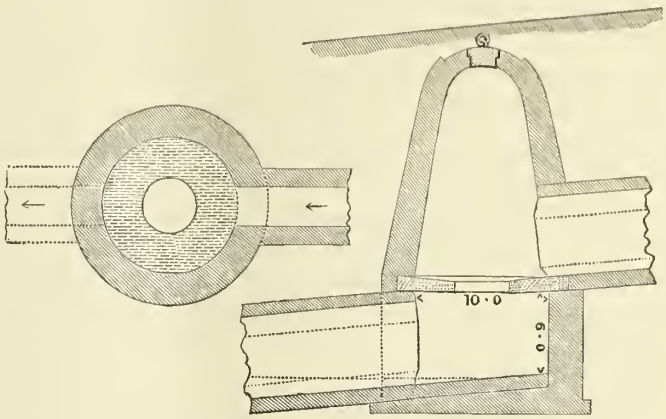
cited, namely, in the five-pilastered front of the centre houses on the *south* side of Bedford Square, designed by the late William Leverton, but the intention of which is defeated by the pediment above them. My original document adds that this building is "of moderate elevation, and covering a considerable space of ground; its chaste and elegant architecture, carried out in the Italian style, combines admirably with the surrounding majestic scenery to produce an enchanting picture, and cannot fail to attract the notice of travellers in the western part of the county, wherein it is situated between Loch Long and the Frith of Clyde, nearly opposite the town of Greenock. The fate of this building and the property on which it stands, as regards the family of Argyll and Lorn, was announced in the newspapers of 15th September, 1866, in the paragraph, that "a Glasgow sugar merchant, well known for his extensive dealings in Mincing Lane, has, it is stated, purchased the Roseneath Estates of the Duke of Argyll, for 170,000."

On the plans of Roseneath is written a short general description or specification. The recital of a few of the more important directions will be interesting as recalling in what manner good work was expected to be done about sixty years since.

Stone was to be employed for all the external walls and decorations; for the inside of the hall and vestibule; for the stairs; and for the chimney pieces in some of the lower rooms: those of the principal rooms and bed-chambers to be of marble. The basement floor to be paved. The internal walls to be of brick. The entrance door and the screens in the vestibule and passage to be glazed. The windows to be in mahogany and patent sashes. The doors of the ground floor to be deal painted, and to be double to each opening. The basement to be arched, for which very minute directions are written, and to be done after the house is roofed in. No bond timbers, wall plates, or lintels to be used in any floor, as all openings are to be solidly arched over in three half-brick arches. Only a few wooden bricks, to which to fix architraves and other fittings; "the greatest care to be taken in avoiding any timber or any wood to be nearer to any flue or chimney than 9 inches at least." All the flues to be 9 inches wide and 18 inches long in the clear. The floors of the three upper stories to be bridging floors. The girders to be trussed as shown, and to be secured with irons, as sketched. All the ends of the binding joists that go into the walls to be secured with an iron strap spiked to them and turned up into the wall about 2 feet. The ends of the girders and binding joists to rest upon a piece of stone and a small arch turned over them, that no dampness of the green walls should be in contact with the timber. All the ends of the timber that go into the walls to be daubed with pitch and rosin melted together in equal quantity. All the walls to be well grouted every twelve or thirteen courses of brick, or every 3 or 4 feet. On the floors of the lobbies and over the strong room will be trap-doors to go down to the counter flooring, in which places may be secreted some valuables, &c.

The small barrel drains to be 1 foot clear diameter, made water-tight by 6 inches of clay well rammed round the brickwork, which is to be 9 inches thick in two half-brick rings, and well cemented. The main drain to be 18 inches diameter. Their fall to be at least 6 inches in 10 feet. As the depth would increase very much by the fall, a sesspool is to be made about 10 feet diameter, and 15 feet deep, without a bottom if the depth of gravel still continues there. The drain from the sink of the scullery is to have a small sesspool in the area made water-tight, with a trap to the outlet drain with a stone cover to lift off "when it is to be cleaned, which is to be done very often, as the greasy particles will adhere within this sesspool, and very often choak the drain." The soil of this spot being gravelly there will be required but few drains; therefore each area is to have a dry well about 4 feet deep and 3 feet diameter in the clear, steened round and a gravel bottom. Stone skirtings 9 inches high to all paved places; and the doors to be hung with hooks fixed in the stone jambs. One drawing notices "that from the north front to the sea at high water, is 420 feet. At 160 feet is to be placed a "Cone" (*see* Woodcut) to prevent the water rats coming up into the drains which will

absolutely be obtained by the projecting stone shelf at the bottom of the cone; the upper drain from the house is let into one side of a cone 10 feet in diameter at the level of a shelf projecting 3 feet all round the cone, which leaves a space of 4 feet diameter in the middle, down which the sewage would pass into a cylinder under the cone, also 10 feet in diameter, and 6 feet 6 inches high," from which passes the lower drain to the sea. The level dotted line at the bottom of the woodcut proceeding from the centre of the cone, shows the level of the highest tide coming up the sewer from the sea. A very useful addition is made in the "N.B. A plan of this drain and of all the drains of the house should be carefully preserved to find at once the avenues to any of them in case of any accident. There should be plenty of water running down all the drains to cleanse them very often, and to prevent the bad effluvia."



It may be further noticed that the arrangement of the floor timbers are very carefully marked on the plans. The roof plan shows only six water-pipes to carry off the rain water from its extensive area; and only one is marked to relieve the roof of the circular portion, and its water comes down upon the lower roof; their diameters are not marked, but they enter a 6-inch drain. Slating on boarding is used. One of the sections shows that the bedrooms in the circular portion are warmed by the fireplace being formed under the window-sills, a position we should imagine to be a much more modern introduction.

Such is the best account I have been able to produce of the principal works by which Mr. Bonomi established his reputation in this country. They are comparatively little known, but at the period of their erection they were considered as having contributed to the diffusion of a correct taste in the adornment of private mansions, and to the embellishment of English rural life; indeed, the name of Bonomi occurs in the best novels of his day, as that of the architect who necessarily was to be consulted in all matters concerning a country residence. Mr. Bonomi's talents as an artist of high rank are beyond dispute; we have sufficient evidence of them in the contributions before us, which very fairly exhibit his originality of design, combined with peculiar skill in delineation and in colouring; these Drawings, we are assured, were his own handiwork, and not the production of an assistant employed to make an "Exhibition drawing." His theoretical knowledge and practical skill in Perspective procured him many pupils. Among these were several branches of the aristocracy, by whom that department of the art was more often studied that it is at the present day; and some of them, it may be presumed, promoted his subsequent success as an architect. The style adopted by him was the Italian or modernised Roman; and he sought to obtain the characteristic effect appropriate to the object of his design, rather by just proportions and good details than by unnecessary ornamentation and littleness of parts, thus exhibiting his preference for the "Architecturesque" over the "Picturesque." Excepting his son Ignatius, I am not aware that he had any pupils. In his professional conduct, Mr. Bonomi was distinguished by a high sense of the honor and dignity of the liberal art he professed. Proud of its connection with science and literature, both of which his education as a gentleman had taught him highly to value, he had little disposition to tolerate presumptuous ignorance and vulgar pretension; nor could interested motives ever induce him to depart from that high and honorable course which he felt to be alike prescribed by self-respect and by the dignity of his profession. Superior to the paltriness of professional jealousies, he was ever a candid judge of contemporary merit. His engagements led him into

frequent intercourse with the rich and powerful, but nowhere did he feel so contented and happy as in the bosom of his own family, or in the society of a few chosen friends. Among these he delighted to number several distinguished artists. The gifted but unfortunate James Barry, found under Mr. Bonomi's roof the shelter which soothed the last moments of his aspiring (but in a worldly sense) unsuccessful career. Being taken suddenly ill at the Ordinary which he frequented, and unable to obtain admission into his own desolate dwelling, he was conveyed to Mr. Bonomi's house, No. 76, Great Titchfield Street, where he received every necessary attention, and expired on the 22nd February, 1806. Grammatical correctness in the use of the English language, an accomplishment most difficult to a foreigner, appears from the autograph observations and remarks inscribed upon the drawings to have been thoroughly acquired by Bonomi; hence we may infer, that it was not ignorance of the difference between the meanings of similar words in English and Italian, but a sense of his personal character and established position, which authorized him to address strangers who wished to be his clients, in the independent tone shown in his printed "Scale of Charges;" that statement I shall have the pleasure of reading to you as characteristic of the man.

TERMS OF JOSEPH BONOMI, Architect, No. 76, Great Titchfield Street, London, January, 1794.

No. I.

Five per centum commission upon the whole expense of the Building, labour, and materials, at London prices;

For which B. makes the design, furnishes all the necessary working drawings, and four fair drawings, two plans, one front, and one section; makes the necessary estimate; and attends the execution of the work.

If a clerk of the works is required (as he should be), he is to be paid by the employer.

All the journeys, *to and from*, to be paid at the rate of eighteen pence per mile.

If it should be desired, after the building is completed, to have it measured and valued; the expenses attending such measurement and valuation are to be paid by the employer.

If the expense of the building exceeds the estimate given, then B. demands no more than the commission upon the amount of the given estimate; provided though, that the overplus is not caused by additions and alterations in the design.

No. II.

When it is only desired to have a design, with the necessary drawings for execution, &c., and an estimate, but without any attendance to the execution of the building, then such design, drawings, and estimate, are to be paid at the rate of three per centum upon the amount of the estimate, at London prices.

No. III.

If B. is called to settle some business, to give advice, to make additions, or alterations, &c., then B. demands five guineas per day, besides the journeys, paid as above; and, if any drawings are wanted, after B's departure from the place, such drawings, valued at the rate of five guineas per day, are to be paid extra.

After the design has been approved of, if any alterations, additions, or diminutions are required to be done, the necessary drawings, requisite in making such alterations, &c., are to be paid extra, at the above rate.

In case that a design has been made, complete, and approved of, and another design in lieu thereof ordered to be made, then the former design is to be paid at the rate of three per centum, and the second at five per centum commission, upon the whole expense, as above, when executed by B. If not executed, then such second design also is to be paid at the rate of three per centum, as expressed by No. II.

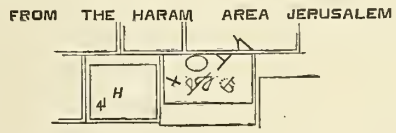
SOMETHING ABOUT MASONS' MARKS IN VARIOUS COUNTRIES.

By George Godwin, Fellow, F.R.S., F.S.A., &c.

In early days I noticed the fact, now well known, but not so then, that the stones of many old churches bore peculiar marks, the work of the original builders; and, so long ago as 1841, submitted a communication on the subject to the Society of Antiquaries. This, with a second memoir on the same subject, and transcripts of 158 of the marks from England, France, and Germany, was printed in the 'Archæologia,' vol. xxx, p. 113. I believe I may take the credit, such as it is, of having first brought these signs under public observation, and for several years I never met any person who had independently noticed them. It is curious how long a thing may remain unseen until it has been pointed out. I remember the observation of an old French priest to whom I had shewn the marks with which the walls of his church in Poitiers were literally strewn:—"I have walked through this church four times a day, twenty-eight times a week, for nearly forty years, and never noticed one of them; and now I cannot look anywhere but they flit into my eyes." Since that time I have made very large collections in various quarters, and when at a recent meeting of the Institute a memoir was presented by the Chevalier J. P. N. da Silva, 'Sur la véritable signification des Signes qu'on voit gravés sur les anciens Monuments du Portugal,' it occurred to me that some account of that memoir, with such additional matter concerning masons' marks generally as I had collected, might not be uninteresting. I am sorry I cannot carry out this intention completely, and as I should desire. The notice given me was short, and the mass of matter in my hands is so large that I find it impossible to do more than bring together a few disjointed observations, and a selection from the marks in my possession. These are now before you, and range over many centuries.

In the great Pyramid of Gizeh many of the stones present symbols, either quarry marks or masons' marks, in red ochre, apparently made before the stones were placed. Some of these are published in Vyse's book. Masons' marks have been found, too, on ancient buildings in Lycia and Mesopotamia, and in various parts of India. In 1846 some marks were accidentally discovered in St. Mary's Church, Leicester, (on removing the great west window), one of which is almost identical with a mark found by Colonel Vyse on the walls of Lady Arbuthnot's Chamber in the Great Pyramid.

No. 1 shews marks found in Campbell's Chamber at Gizeh.



The accompanying diagram represents the marks on stones recently discovered by Lieut. Warren in an excavation at the south-east angle of the Haram area in Jerusalem. The H form, and the mark below it, and a cross + on an upper stone, are deeply cut in; the rest of the marks are in red paint.

No. 2 gives other marks from churches in the Holy Land,—Sebustiyeh (or Samaria), Bireh, Jerusalem, and elsewhere. These are unquestionable masons' marks of the Christian period, probably of the eleventh or twelfth centuries (although I have no precise knowledge of the buildings from which they were taken), and, with two exceptions, have been widely used, as may be seen on reference to the other illustrations. The exceptions are one at Samaria, somewhat like the Arabic numeral 3 (though it is not a numeral), and one at Kuryet el Enab, which is apparently the double of the last alluded to. The mark at Jerusalem like the broad arrow (the present mark of our own government) occurs in St. Anselm's crypt (the earliest portion of) Canterbury Cathedral, Furness Abbey, Bosworth Church, Lincoln Cathedral, and many other places.

Through the kindness of Miss Mary Eliza Rogers, I have obtained from the ruined buildings of deserted cities in the Badouin-haunted districts beyond the river Jordan, a number of marks scratched on the stones. (No. 1.) Mr. E. T. Rogers, our Consul at Cairo, has copied many of these signs, and connects them with the Bedouin wanderers, who pitch their tents from time to time in the neighbourhood of these ruins. Each tribe has, he says, its distinctive mark; and tents and cloaks are embroidered and camels are branded accordingly. Some of these forms, collected by Mr. Rogers from tents and camels, are like those on the ancient walls of which I have given representations, but I am inclined to consider the latter quarry or masons' marks.

In Price's 'Journal of the British Embassy to Persia,' with a Dissertation upon the Antiquities of Persepolis (published by Kingsbury & Co., 1825), the author gives specimens of what he considered to be the Antediluvian character, and adds,—"It is rather remarkable that signs resembling these should be used by stone masons, as distinguishing marks, in every part of the globe where I have had opportunities of observing; which signs, in all likelihood, have been used by stone-cutters ever since the confusion of tongues."—Vol. I, p. 32, of the Dissertation.

The trident-like mark on the stones of the wall in Pompeii is very curious (No. 3). Nearly every stone bears it. Dr. Barlow, who made the sketch for me, says, "The wall, if I remember rightly, is not very far distant from the Porta Romana, or the gate of Pompeii towards Rome. I have since drawn and measured much masonry of ancient structure, both in Greece and Italy, but have never noticed any marks on the stones like these, or indeed any marks at all."

No. 3 shews other marks from Pompeii, chiefly from the inner face of the town walls. With reference to marks found on these walls, there are half a dozen lines in the work on Pompeii, published by Chas. Knight, which may be worth quoting. The author says, "On many of the stones certain characters are found, intended, apparently, as directions to the workmen, which are said by M. Mazois to be either Oscan, or the most ancient forms of the Greek alphabet." Various theories are propounded on this, very much ante-dating the build of the walls, which probably have not a very high antiquity. The characters are evidently masons' marks, carrying on the early forms which Mazois recognized. The Etruscan alphabet includes forms used as masons' marks to this day. So, too, the Lycian alphabet, as given by Sir Charles Fellowes in his 'Lycia,' p. 442. Some of the letters will be found at No. 6. While speaking of Lycia, I may point to No. 5, which shows the marks on the stones of a Turkish ruin, called the Old Khan, not far from Adalia, on the road to the Gulelook Pass.* These marks are precisely similar to those found on Mediæval buildings in other countries. Before quitting Italy, reference may be made to marks from the Doge's palace, Venice (No. 4). These were found on the spandrels of the lower arcade (at the end nearest St. Mark's), usually dated about 1350.

No. 7 represents marks from some Roman altars found in England. The mark known as the Fylfot, seen on one now in Alnwick Castle, has been pointed to by Lord Broughton as denoting the hammer or mace of the Scandinavian God, Thor. It is seen with Thor on various medals and on Runic monuments. It also occurs in the Minster at Basle. With reference to the connection of the Scandinavians with Italy Sir William Betham ('Etruria Celtica') shews an Etruscan coin with this symbol on it. No. 7 includes also the cuttings, resembling masons' marks, which occasionally occur on the stones of the Roman wall in Northumberland (2nd century). Sometimes they consist of a single or double stroke; sometimes of a diagonal cross; sometimes a rectangular cross. The other marks which are represented are less frequently met with.† Search has been made on the Saxon portions of Monkwearmouth, Jarrow, Sumpting, Worth, and some other churches of that period, but no masons' marks were detected.

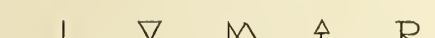
* Spratt and Forbes's Travels in Lycia, 1847. Vol. I, p. 227.

† See Dr. Bruce's Book on the Roman Wall.

Collected by George Godwin.

16. ENGLAND.
LATE INSTANCES

17.

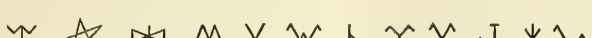


BOOKS OF BRICKLAYER AND TYLER'S COMPANY ABOUT 1580

18.

FROM RUINS OF UPSAL CASTLE NEAR THIRSK YORKSHIRE

19. SCOTLAND.



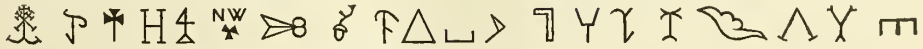
GLASGOW CATHEDRAL CRYPT

ON A STONE FOUND IN A TUMULUS, ISLAND OF BRASSAY ZETLAND

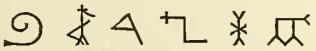
20. IRELAND.

ST MARY'S YOUGHAL 13TH CENTURY PORTION

21. FRANCE.

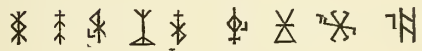


STRASBURG CATHEDRAL



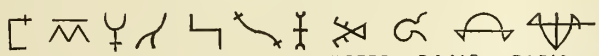
STRASBURG CATHEDRAL

22.

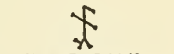


CHURCH OF ST MICHAEL, DIJON

23

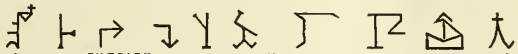


NOTRE DAME PARIS



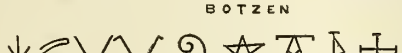
SVANIKE, DANISH ISLAND OF BORNHOLM

24. THE TYROL.

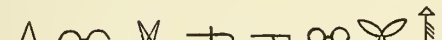


BOTZEN

25. SWITZERLAND.



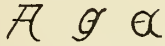
CATHEDRAL LAUSANNE



CATHEDRAL GENEVA

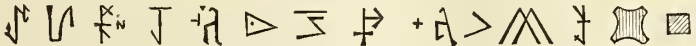
CATHEDRAL GENEVA

26 SWEDEN.



UPSALA CATHEDRAL 13TH CENTY

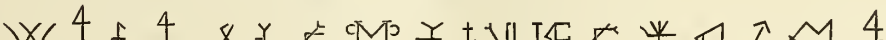
27. GERMANY.
MÜNSTER.
ABOUT 1500



CATHEDRAL

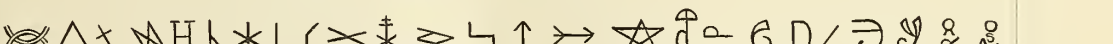
ST LAMBERTS ABOUT 1390

28. AUSTRIA.

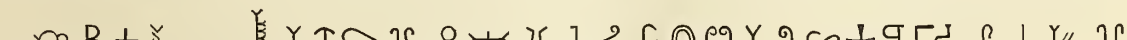


ST STEPHEN VIENNA 14TH CENTY

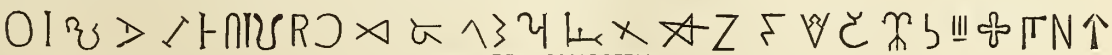
29. SPAIN.



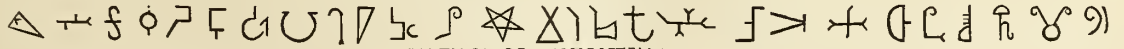
SAN: YSIDORO. LEON



SAN: YSIDORO. LEON SANTIAGO DE COMPOSTELLA



SANTIAGO DE COMPOSTELLA



SANTIAGO DE COMPOSTELLA

Collected by George Godwin.

No. 8 shews a mark on a stone containing an Anglo-Saxon inscription, Aldborough Church, Holderness, Yorkshire.

No. 9 gives marks from Kenilworth.

10. ,, Sussex.

11. ,, Lincoln Cathedral.

12. ,, Leicester, Gaddesby, York Minster (early English basement, now in crypt).

13. ,, Canterbury Cathedral (earliest, Anselm's crypt).

14. ,, Haddon Hall.

15. These marks, from the Church of St. Nicholas, Yarmouth, are from the stones of the pinnacles of the two outer turrets at the west front. The Rev. R. M. Musgrave, who sent them to me, says, "These pinnacles, erected about 1230, were taken down in consequence of being unsafe. The proportion of marked stones seems to be about one in four." As to the use of outlines of limbs and other objects of that kind, Mr. Musgrave suggests that they may be "referable to a lower class of labourers not entitled to use the more strictly masonic characters." I found the outline of a leg used as a mark in the spire tower of Strasburg Cathedral.

No. 16 shews some of the latest marks that I have met with in England on the face of stones.—Goddard's Alms Houses, Bray, 1625 to 1628, and Brambletye House, Sussex, 1631.

No. 17. Before dining with the Court of the Bricklayers' and Tylers' Company, some years ago, I was enabled by the then Master to glance through some of their old minute-books. In the year 1580, nearly all who attended and signed the book used a mark or initial, the name being written at the side of it. I give a few of these characters; some of them are known masons' marks.

No. 18. England: Yorkshire.

19. Scotland: Glasgow Cathedral, crypt, 1175 to 1233; Zetland Isles.

20. Ireland: St. Mary's, Youghal, 13th century.

21. France: Strasburg cathedral.

22. ,, St. Michael's, Dijon.

23. ,, Notre Dame, Paris; Danish Island, Bornholm.

24. The Tyrol: Botzen.

25. Switzerland: Cathedral, Lausannne; and Cathedral, Geneva (part 11th century).

26. Sweden: Upsala Cathedral.

27. Germany: Cathedral, Münster; and St. Lambert's, Münster.

28. Austria: St. Stephen's, Vienna.

29. Spain: San Ysidoro, Leon; Santiago de Compostella.

30 & 31. ,, Sta. Maria, Benavente, Segovia.

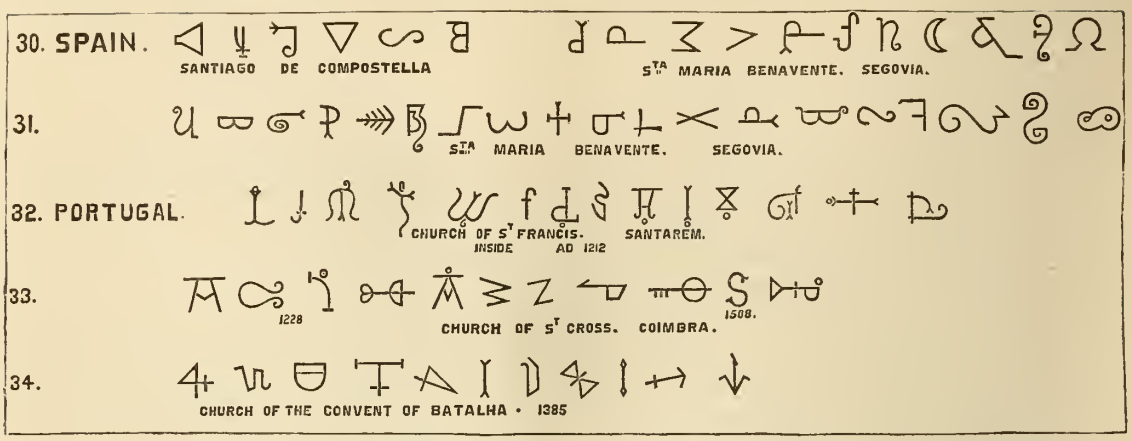
32. Portugal: Church of St. Francis, Santarem.

33. ,, St. Cross, Coimbra.

34. ,, Convent of Batalha.

I have drawn up with more pains perhaps than the end repays, lists of various places in different countries whereat the same mark, selecting those most widely used, may be found. I must content myself, however, with placing only a few of them before you:—

The hour-glass form has been found on stones on the site of Carthage. Postern, Hastings Castle, 11th century. Cathedral, Geneva, 11th and 12th centuries. Lausanne Cathedral, 11th to 13th century. Turkish ruin, "The Old Khan," not far from Adalia, in Lycia. Kirkstall Abbey. Roche Abbey. Furness Abbey (12th century, part). Gloucester Cathedral (inside nave).



Malmsbury Abbey Church. The Church du Bon Dieu, Setubal, Portugal, 1489. Church of St. Francois, Santarem, Portugal, 1242. Lincoln Cathedral, 13th century. Kenilworth Gateway. York Cathedral, 13th century. Canterbury Cathedral, columns, nave. Salamanca, Old Cathedral (Spain), before 12th century. Cathedral, Lréida, Spain, 14th century. Mauresa Church, Spain, screen round coro, 15th century.

The **N** form, in Anselm's crypt, Canterbury Cathedral, end of 11th century. North aisle of nave, ditto. Church, Samaria, Holy Land. Norman Tower, Bury St. Edmunds. Crypt, York Minster. St. Mary's Abbey, York, Chapter House, 12th century. Maison Dieu, Brechin, Scotland, founded 1264. St. Pierre, Poitiers. Cathedral, Geneva, 11th and 12th centuries. Old Cathedral, Salamanca, Spain, before 12th century. Kirkstall Abbey. Roche Abbey, 12th century. Lincoln Cathedral, 12th century. Fountains Abbey, 12th century. Strasburg Cathedral, 12th century part. Leon Cathedral, Spain, 13th century. Cathedral at Santiago de Compostella, Spain, before 1200. Friburg Cathedral, 14th century. Sir John de Creke's Monastery, Westley Waterless, Cambridgshire, about 1325.

The pentacle at Kuryet el Enab, Holy Land. Church in Jerusalem. Malmsbury Abbey Church. Furness Abbey (12th century part, and 13th century). Dunstable Church (12th century). Steyning Church, Sussex, 12th century. (A suit of armour in the Museum at Turin is powdered with this sign, coronet and letter F.) Cathedral, Geneva, 11th and 12th centuries. Gloucester Cathedral, 11th and 14th centuries. Lincoln Cathedral, choir, 12th century. St. Mary's Abbey, York (north aisle, nave), 1270. Ditto, Chapter House, 11th century. Fountains Abbey. Strasburg Cathedral, 12th century portion. York Cathedral, 12th and 13th centuries. Glasgow Cathedral. Brechin, Cathedral Tower, Scotland (supposed 1354 to 1373). Canterbury Cathedral, north transept, choir. Church of San Ysidoro, Leon, Spain, choir, 15th century. Santiago de Compostella Cathedral, Spain, before 1200. Lérida Cathedral, Spain, 14th century. (On a Saxon fibula, found at Harnham Hill, near Salisbury, date supposed 646 to 672).

The topped **A** at Church in Samaria, Holy Land. Gloucester Cashedral, 11th and 12th centuries; also on later part. Fountains Abbey, 12th century. York Cathedral, 12th and 13th centuries. Church of St. Martin, Cintra, Portugal, 1147. Church of St. Croix, Coinibra, Portugal, 1228. Church of the Convent of Belem, Lisbon, 1500. Cathedral, Leon, Spain, 13th century. Lerida Cathedral, Spain, 14th century. Cathedral, Segovia, Spain, 15th an 16th centuries.

The horizontal form at—Canterbury Cathedral, north transept, choir. Fountains Abbey, Chapter House, 1165. Gloucester Cathedral, inside nave. St. Pierre, Poitiers, outside. Freiro da

Espada, Cinta, Portugal, 1214. The Convent at Thomar, Portugal, 1323. Several churches in Spain.

The at—Church Samaria, Holy Land. Cathedral, Münster, Germany, (south transept), 1500. Glasgow Cathedral. Canterbury Cathedral. Kenilworth, Cæsar's Tower. York Cathedral, choir. Fountains Abbey, 12th and 15th centuries. Bolton Abbey. Lincoln Cathedral, 12th century. Roche Abbey. Soulbury Church, near Woburn, (perpendicular nave).

The cross with stopped ends at Furness Abbey (12th century). Gloucester Cathedral, 11th and 14th centuries. Fountains Abbey, cloisters, 13th century, and Chapter House, 12th century. York Cathedral, 12th and 13th centuries. Church du Bon Dieu, Setubal, Portugal, 1489. Freiro de Espada, Cinta, Portugal, 1214.

The length of the marks, it may be as well to mention, ranges from one inch to five or six inches. The greater number, however, are from two to three inches long.

The majority of the marks I have given from Spain are taken from Mr. Street's 'Account of Gothic Architecture in Spain.' Speaking of the ancient buildings there, the author says,—"The masons seem to have worked together in large bodies, and the walls are marked in all directions with the signs which, then as now, distinguished the work of each mason from that of his neighbour; but I have been unable (save in one or two cases) to detect the mark of the same mason in more than one work; and from this it would seem to be probable that the masons were stationary rather than nomadic in their habits, a deduction which is fortified by the difference of general character which may, I think, be detected between the groups of marks in different buildings. Occasionally the number of men employed on one building seems to have been unusually large, and it is clear, therefore, that there were great numbers of masons in the country. In the small church of Sta. Maria, Benavente, there are the marks of at least thirty-one masons on the eastern wall; as many as thirty-five were at work on the lower part of the steeple at Lérida; whilst in one portion of Santiago Cathedral there appears to have been as many as sixty"

Looking through the marks given in Mr. Street's excellent book, I find the same mark repeated a little oftener than might perhaps be inferred from the writer's remark. Thus the universal N form occurs in Lérida Cathedral, Leon Cathedral, the Cathedral of Santiago de Compostella, and the old Cathedral of Salamanca. The pentacle appears in Lérida Cathedral, the Cathedral of Santiago de Compostella, and the Church of San Ysidora at Leon. The hour-glass form is in San Ysidora, Leon; Lérida Cathedral, and elsewhere. The same form without the bottom line, occurs in Lérida Cathedral, Cathedral of Santiago de Compostella, San Marcos at Salamanca, Terragona Cathedral, Segovia Cathedral. The horizontal ⋉ form is in Lérida Cathedral and Segovia Cathedral. The topped Ⱥ is in Lérida Cathedral, and the Cathedral of Segovia, and so with some others, I mention my impression in this respect, not by any means as seeking to contradict Mr. Street, but because the inference drawn, namely, that "the masons were stationary rather than nomadic in their habits," is of consequence, and it is desirable that those who may have to discuss it should be agreed as to the premises.

The marks from Portugal, to which reference has been made, are chiefly taken from the Chev. da Silva's Memoir, to which I will now briefly allude. It gives 508 marks from ancient buildings in Portugal, besides a supplementary plate containing 14 marks from the great Aqueduct of Lisbon, built in 1738, and 22 "ancient Masonic Hieroglyphics," where used is not stated. They are, in fact, nothing more than a "secret alphabet" of our school days; and so transparent that no one would think of trusting a secret to it. The marks in Portugal are feebler and coarser than those of some other countries, but include many of the latter, as I have already pointed out, such as the hour-glass form, the topped A, the N form, and many others. The earliest given are dated A.D. 1102.

In my second letter to the Society of Antiquaries on the subject, I said, "The marks, of which we

are speaking, it can perhaps hardly be doubted, were made chiefly to distinguish the work of different individuals. At the present time the man who works a stone (being different from the man who sets it) makes his mark on the bed or other internal face of it, so that it may be identified. The fact, however, that in the ancient buildings it is only a certain number of the stones which bear symbols, and that the marks found in different countries (although the variety is great) are in many cases identical, and in all have a singular accordance in character, seems to shew that the men who employed them did so by system, and that the system, if not the same, was closely analogous in one country to that of the others."

In Portugal, however, going farther than this, it would seem to have been urged that these signs were symbolical, and were used as means of recognition by the freemasons, who, as some believe, travelled over central Europe exercising their art. The principal object of the Chevalier's Memoir is to shew that the opinion of those who have believed that these marks have a masonic signification, cannot, for a moment be admitted. Although English Archæologists may not need any argument to convince them that the marks are not symbolical, they may be willing to hear what he has to say on the point.

" Why should the freemasons," he writes, " who travelled to execute their labours in a body, each accompanied by his family, have placed these signs upon the stones, since each one knew the other for his partner? For none but those initiated or affiliated to their lodges, were permitted to help in the construction of those beautiful edifices; thus enabling them to protect each other reciprocally as loyal brothers, *and above all to keep amongst themselves the secrets of their art.* Why then shew these marks to all the world, if (as it was said) they were simply used with the intention of making themselves known as freemasons, when every workman knew the other as a brother? And, besides, would they have been permitted to make public these signs, if they were really those of the order into which they had been admitted! Again, if these signs were really characteristic of the masonic order, they ought, without doubt, to be identical on all buildings, because the hieroglyphic alphabet, or scale, being composed of a limited number of figures, and masonry having at the commencement but a single rite, the sign would have been reserved for the most urgent cases for recognition or correspondence, and never employed uselessly or exposed to the observation of the profane."

" An attentive consideration of these objections," the writer proceeds, " and the great diversity of the signs seem to us to afford tolerably convincing proof that they are by no means symbolical, and can have no perfect meaning; for, in order to attain this, it would have been necessary to use them with something like order, whilst in none of the buildings that we have examined, and of which we annex the marks, has this been observed. On the contrary, the marks are found on stones at various heights, totally void of connection one with another, and many are placed in inverted positions, although similar in form."

After speaking of the religious feeling that prevailed during the Middle Ages, and the spirit that animated the builders, the writer goes on to say:—

" In order to execute such important works, it was necessary to have large numbers of workmen, the more so as similar buildings were in course of construction in more than one country, and even at the same time, for the execution of which preference was given to the cleverest workmen, and these, being always of the Society of Freemasons, were much sought after everywhere.

" Although the number of the adepts on the spot was considerable, still more were needed to complete the numerous structures then in course of execution, and they were therefore summoned from all parts to work at the buildings in Portugal before and during the construction of the church and convent of Batalha.

" There is still another and stronger reason to confirm the opinion we are about to give on this

question; which is, that the works progressed but slowly, not only on account of the enormous size of the edifices, but more especially because cut stones of small dimensions were employed, and all buildings being constructed with stones faced on every side, the hand labour was greatly increased; the only means available to avoid this inconvenience, and hasten the works, and at the same time to benefit the workmen, was to make them *cut the stones as piecework*, according to dimensions given and designs drawn by the architect. To enable payments to be made to so large a number of workmen without mistake, to know exactly those who had done the various duties assigned to them, the workmen shaped their blocks one after another, and, to avoid confusion in their work, were in the habit of marking each block with a given sign as representing their signature, so as to shew how much was due to them. This, in our opinion, is the reason why we find so many different marks, not only on the same building, but on others which exist in different provinces in Portugal, and why they are met with in different parts of the building."

"The use of these signs," continues M. da Silva, "passed from father to son; and as it was usual (then as in many families of the present day) for sons to follow the same profession as their fathers, from the similarity of marks seen on buildings in the provinces of Portugal, we may learn that the stone-cutters of a certain locality took part in the constuction of other buildings in the same style in different places, and by the date of the construction we may even find out where the workman was first employed.

"Our supposition on this point carries us still farther, for it shows us how many workmen of the same family, that is to say, bearing the same surname, have worked together on the same building at the same time. To find this out, it is sufficient to observe, the second mark, added to the special sign used by them, which will always be the same for the whole family; those marks are usually a zero O, a triangle Δ, a disc ⊙, or a small cross +."

In the examples from Portugal given, this second mark is chiefly a circle (see 32 and 33); so it is also in Spain. In England I have generally found the N form and the acute angle < so used, (see No. 13, Canterbury; also Dijon, 22). My own opinion, expressed long ago, is, that the second mark probably belonged to the overseer; and I see no reason to change it; although this, like other points in connexion with the marks, is by no means certain. I have met with four stones in one wall, nearly close together, each bearing two marks, and the whole eight marks different. In the south transept of York Cathedral there is a stone with three marks on it, and so there is in Strasburg Cathedral (see 21).

M. da Silva finally asks how it can be that these signs are those of Freemasons, when we find them on the stones of several monuments erected before the organization of these fraternities. Here, however, he assumes two things; first, that the marks found on the earliest buildings are precisely similar in description to those of the middle ages; and, secondly, that the date of the initial organization of such fraternities is really known. Moreover, he leaves out of consideration the probability, or, I should rather say, the fact, that the guilds adopted existing forms and symbols. Without considering the marks symbolical, we may yet believe they owe their wide diffusion to the existence of associated guilds. The general similarity which they present all over Europe from, at any rate, the 11th century to the 16th, and indeed to the present day, points to a common origin and continued transmission.

M. da Silva fully admits the existence of the building guilds, and his quotations go to affirm that they were maintained as an opposition to the monastic associations, which were depositaries of old theological traditions, and could be met only by other associations organized with sufficient strength to endure, and in time to become themselves guardians of traditions, and with enough mystery to avoid rousing dangerous resistance.

"Towards the end of the 12th century, when their numbers had become considerable, a special cor-

poration of intelligent architects, stone-cutters and labourers was instituted, who, uniting together, formed a secular body, which acknowledged royal authority alone. Notwithstanding the absence of written proofs and historical documents, it is probable that societies of lay builders existed in Germany as far back as the 13th century. In the year 1275, the Emperor Rodolpho granted a special charta to builders, established in Strasburg, and in 1278, the Pope Nicholas III. delivered them a brief of indulgence, renewed from time to time by his successors."*

The precedence of the Freemasons of Strasburg came to be recognized by neighbouring states, and at a meeting of various lodges held in Ratisbon in 1459, the head of the lodge at the Cathedral was acknowledged the head of the Freemasons in Germany. The statutes of this date of the Strasburg Lodge, from which lodges branched to many places, have been published. Two boards whereon are delineated the marks of the masons who were engaged are still preserved, or were so a few years ago, in the Cathedral.

As to the earlier guilds, in classic countries, of which there are traces, I cannot now pretend to speak; nor will I do more, with reference to our own country, than briefly remind you that a College of Masons is mentioned in a Latin dedicatory inscription, dating from about A.D. 52, and which was found in Chichester, in 1725. A bull was issued prior to 1200, giving authority to heads of churches to build churches, and attaching to them a certain number of "*liberi muratores*," or Freemasons, to direct and execute the ornamental parts of the structure.†

Much might be, and something has been written on the actual origin of many of the marks. I have already pointed to some of them in the Lycian alphabet. Others are apparently Runic letters. In the later works several of the Roman capitals are used, and may or may not be the initial letter of the user's name. The alpha on some Greek altars found in England, near the Roman wall is shaped thus and has been in common use as a mark for centuries. It may be worth note, too, that the letter M in some Latin inscriptions found on the site of the Roman wall and figured by Dr. Bruce, (one of them dated A.D. 216) is thus shaped giving the hour-glass mark when set upright. The top and bottom lines in the letter are curved instead of straight, and I have seen the mark in more places than one (Malmsbury Abbey Church, for example, as figured by me in the *Archæologia*), with the ends thus rounded.

The hour-glass form, however, has been found on stones much more ancient than the inscription referred to. I simply mention the similarity. The hexalpha, or double triangle, was a mystic mark in India centuries ago. The N formed symbol appears on the coins of the Ariarathes, a series of Persian kings who lived before Christ: also on a coin of Amyntas, King of Galatia in the time of Strabo, 50 years B.C. The topped A, as you have seen, has been very widely used. Dr. Clarke mentions that in the walls of the Castle at Paros, butt ends of columns are seen marked with the letter A near the Lewis hole, and suggests that it may be a mark to adjust by, or the initial of the architect, not to be discovered until the building was in ruins.‡

Mr. J. E. Dove, in a series of papers published in *The Builder* some time ago,‖ attributed recondite meanings originally to many of the forms used as marks, and supported his views with erudition and ingenuity. Some of them were in use amongst the Egyptians, and then, doubtless, had signification. The circle and triangle, later taken to symbolise eternity and the Trinity, had earlier a different significance. The acute angle, or V form as used by the Egyptians, he found reason to believe was a

---

* M. Daniel Ramée, 'Histoire Générale de l'Architecture,' quoted by M. da Silva.

† Sir R. Westmacott, 'Archæological Journal,' Vol. III., p. 198.

‡ Travels, part 2, sec. 2, ch. 10. ‖ See vol. for 1863, April 4th, April 18th, June 6th, and July 11th.

feminine symbol, and that the same form reversed ∧ was a male symbol. Into this part of the inquiry, however, I am not now entering. Whatever may have been the original signification of the forms adopted, I find no evidence to lead me to believe they were viewed by the masons other than as signatures, given to them, in some cases, on joining a lodge, or otherwise regulated. The Scotch lodges gave marks till very recently, if they do not do so now. In St. Ninian's Lodge at Brechin every member had to register his mark in a book kept for the purpose, and he could not change it without certain formalities.

I must now end. The subject is probably more curious than useful; but I hope you will consider it sufficiently interesting to justify me in again bringing it before you. In my first communication on the matter to the Society of the Antiquaries, and afterwards to the Institute, I ventured to express my belief that "no circumstance which promises to throw even the smallest additional light on the early history of those wonderful men to whom we are indebted for so many magnificent buildings can be deemed insignificant or unworthy of consideration;" and I think so still.

At the conclusion of the reading of the papers,

The PRESIDENT, in inviting remarks upon them, observed with regard to Bonomi, that he was sorry to say his name had almost gone out of recollection, except in connection with their kind friend the curator of the Soane Museum, and he was not aware till now, that that gentleman was so nearly related to the eminent man who in his (the President's) early days, was brought a good deal before the architectural world. The memoir was an extremely interesting one, and it would be well if all architects acted upon the recommendation of Mr. Papworth to have their drawings bound up. He was afraid life was too short for individuals always to adopt that course, but it occurred to him to mention that a striking instance was afforded by the late Sir Robert Smirke, who, with that carefulness which was part of his character, bound up all his drawings, and he (the President) had seen a great number of volumes of drawings of the Post Office, Custom House, and other public buildings, executed by Sir Robert, all indexed and bound with the greatest care. He supposed they were in the hands of his brother, and they would form hereafter a curious record of the enormous amount of work which that great man carried out. Adverting for a moment to Bonomi, he (the President) was not aware till now that he had so complete an acquaintance with perspective as to lay claim to the professorship of that branch of the Royal Academy; and the anecdote of the struggles of the then President of the Academy to obtain that appointment for him was very curious indeed. He recollected when he was himself a student at the Royal Academy, Mr. Turner, the great painter, was professor of perspective there, and gave six lectures annually, in a highly amusing way. The lectures were sometimes illustrated by a number of very beautiful drawings, but in the absence of instructions to the porter they were exhibited without any reference to what the learned lecturer was speaking of, and the whole affair was a singular instance of the misappropriation of a great man's talent. As far as his own experience went, notwithstanding the merits of Turner, he thought his perspective was often wrong and careless; perhaps he became more experienced afterwards, but the truth was that in his later pictures, with their flood of colour, perspective was not a matter of much consequence. With regard to the paper of his friend Mr. Godwin "on Masons' Marks," it was one which elicited a good deal of information and supplied a certain amount of instruction. He supposed the fact of the origin of freemasonry could not be much doubted, viz. that it arose from those bodies of masons who congregated in places where they were building, though he did not join the fraternity in believing that they built Solomon's Temple, and that through the murder of one of their number they constituted themselves into a distinct fraternity. The marks referred to he had never noticed on the face of the stones;

he had often seen a mason make a mark on the stone he was working; but it was generally put on the top bed, so that it could be seen till the next course came upon it, and that might in some degree account for the fact mentioned, that a very small proportion of the stones showed a mark and others none. He thought, in the latter case, the mark was on one of the other faces.

Mr. GODWIN said—In some cases these stones had been taken down, so that they could be examined all round; and it was seen that only a certain number of them bore marks.

No further remarks being offered upon the papers,

The PRESIDENT proposed a vote of thanks for the loan of the drawings illustrating the paper, lent by Mr. Ignatius Bonomi, and Mr. Goldie, one of their members, also to the family of the late Mr. C. Smith, for the presentation to the Institute of the drawings exhibited executed by Joseph Bonomi.

This was unanimously agreed to.

The PRESIDENT said—Their next duty was to express their thanks to Mr. Wyatt Papworth for the care and pains he had taken, and the success which had attended that care and pains in presenting them with an extremely interesting memoir of an eminent member of their profession long since passed away; also to his old friend Mr. Godwin, for the care and pains which he had bestowed upon a remarkable subject. Though perhaps it was a study more interesting to the archæologist than the architect, at all events they were bound to thank him for having devoted, amidst his numerous occupations, so much time and attention to a very recondite subject.

The several votes of thanks were unanimously accorded, and the meeting adjourned.

Royal Institute of British Architects.

At the Ordinary General Meeting, held on Monday, 15th March, 1869, C. Barry, V. P., in the Chair, the following Papers were read:—

A COMMUNICATION FROM PROF. DONALDSON, Past President, Hon. Sec. F.C.

(Addressed to the President, W. Tite, M.P.)

Rome, 58, Via del Babuino,
3rd March, 1869.

My Dear President and Friend,—I had dated a sheet from *Athens*, having intended to write to you thence, knowing the deep interest that you take in every thing that is Greek. But I was so much engaged during the few days I was there that I could not find time, and ever since I have been prevented sending you a letter, until at length shame makes me put aside every other consideration, and write to you from *Rome*, the second of artistic cities of classic art. I can only send you a few scattered observations at present, as I am collecting points of information, none of which are at present sufficiently complete for the Institute; and I must defer a more formal communication till my return, which will, I hope, be by the middle of April. I am seeking to inform myself of the principal works carrying on in Italy, and to know the leading men employed. There is a good deal of movement going on in Italy proper for the improvement of towns, and additions to some of the principal cities; and there are also works going on in Rome; but they are generally *roba di Chiesa!* The Pontifical government seems more intent upon restoring dilapidated churches, than upon works of municipal utility for the sanitary condition of the town or the convenience of the people. Sewage is sadly deficient; even the Cloaca Maxima still remains *full of soil*, on account of the expense to be incurred by the removal of the accumulation! and yet tens of thousands are spent upon the restoration and embellishment of basilicas or churches with scanty congregations, or in out-of-the-way situations. Very few streets have *footpaths*. My own is a very much frequented and wide thoroughfare, from the Piazza del Popolo to the Piazza di Spagna, and some thirty yards or so have alone a footpath of good width, but paved with coarse, hard, gritted, pebbly slabs. The carriage ways generally are kept clean, and are *well paved* with small basaltic blocks, in form, and almost size, resembling the "*opus reticulatum*," wedge-like, and pointed at the lower end. I must mention with great approval a very fine winding road, leading up to the Monte Montorio, in Trastevere, and to the Aqua Paolina. It rises so much above the level of the city, and has such a winding, that at every dozen yards there is a fine commanding fresh view; the whole city, with its public buildings of gigantic size, its cupolas and towers, its seven hills and palaces, the Capitol and Coliseum, rise up one after the other, till all come into the panoramic view, and you see the Campagna with its line of aqueducts, backed by the range of the Apennines, studded with villages, and by the line of Alban hills, with Frescati, Tusculum, Grotta Ferrata, etc., lying on the slopes, and dotted with fine villas. I think that this view is unequalled in the world; at least, I know nothing that approaches it, except it be (*lungo intervallo*) the new drive, partly completed and partly in progress, in the Trans Arno, at Florence, near the Poggia Imperiale. There you have the gradual winding ascent on the rapid slope, with Florence, and its cathedral, and Campanile, and fine edifices, backed by the Apennines also; the valley of the Po lying also under your eye towards Pisa. But there the antique associations do not equally mix themselves up with the objects in view, and the terrible middle

ages are substituted for the imperial centuries of the capital of the world—Roma Eterna. The Pope is slowly carrying out various excavations of much interest. The discovery of the Marmorata, or marble depôt of the ancients, on the banks of the river, is of much importance. A great length of the antique quay is exposed, with the landing-places, and the blocks of stone are perforated with holes to receive the cables by which the vessels were moored. Above 1000 pieces of marble have been uncovered. There is one cylindrical shaft, 18 feet 8 inches long by 4 feet 10 inches in diameter, of African marble, of light and dark green tints, and red and white (apparently quartz) veins. A cipolino block, 9 feet 6 inches by 6 feet 6 inches, by 3 feet 9 inches, on which is an inscription :—

EX. M. N. CAESARIS N. R. D. A. SVB CVRA. C. CEREALS. PR.
SVBSEQ. SERGIO. LONGO. I LEG. XXII. PRIMIG. PROB.
CRESCENTE. LIB. N. XVIIII

Ex metallis *no*vis *Caesaris no*stri *r*ationis *d*omus *a*ugustalis *sub cura* Caii *cerealis pr*aepositi *subseq*uente *Sergio Longo* centurione *Leg*ionis *XXII. primig*eniæ *prob*ante *crescente lib*erto *n*umero *IX.*

Such inscriptions seem to be on the principal piece of each cargo, and indicate the quarry whence sent; the names of the superintendent and freedman (who are noticed in Tacitus,) so that the series may be attributed to Nero's time. The number of pieces is also noted. This inscription and its amplification have been kindly furnished to me by the Baron Visconti, whom I accompanied to the spot, and who is superintendent-general of the excavations, and cousin of the celebrated Parisian architect, our late Honorary and Corresponding Member; and I am to go with him to Ostia. He has lately excavated the firemen's quarter in Trastevere, near the Monte di Fiori, which is sunk some 20 feet below the general level. The part laid open consists of a square court, 27 feet 3 inches by 24 feet 2 inches, with a seat along one side for the firemen to sit on, a fountain in the centre, and an ediculum on another side of the court. The walls were painted, and are covered with an immense quantity of graphiti, or scratched inscriptions, by the men, extremely curious. The floor is inlaid with an admirable mosaic, with black figures on white ground. Two large marine tigers, well drawn, and a marine goat, characteristically expressed, with the heads and bodies of those animals and tails of fish. There are two centaurs, less well drawn; one has a flambeau in one hand, to indicate fire, and in the other a trident, allusive to water for its extinction. The other has a vase with fire, and points to the trident to put it out. The ediculum is of brick, with Corinthian capitals, and bases cut out of terra-cotta. I reserve explanations of other pontifical excavations for a future occasion, particularly those of the palace—or rather the *palaces*—of the Cæsars, as the Mons Palatinus should be properly called.

The restoration of St. Paul's without the walls has been carried out most sumptuously and gorgeously, and with the strictest attention to the original basilica, by the Commendatore Poletti, who I hope we shall number among our Honorary and Corresponding Members. He is perfect master of our art, and designed and executed the column of the Immaculate Conception in the Piazza di Spagna; and I shall bring home for the Institute various of his works, which he has given me for the purpose of adding to our library. He has made a most important addition to the literature and history of our art, in two papers, read as President before the Academy of S. Luke's, on the primitive arts of Italy. He propounds the theory, that Italy was peopled by an indigenous race from the most remote times, and *anterior* to Greece: that we must regard as merely fabulous traditions that the Greeks originally emigrated into Italy; on the contrary, the Italians first emigrated to Greece, and there carried *their* civilization and *their* arts, anterior to—or, at all events, coeval with – the Greeks. He quotes passages from Virgil, Strabo, Dionysius Halicarnassus, Pausanias, Herodotus, Thucydides, Pliny, etc. He considers the Pelasgi, Tyrrheni, and Etruscans as identical; and points to their Cyclopean walls, their

tombs, and other remains, as indicating a civilization and artistic excellence quite independent of Greek influence, and *anterior* to it, individual, and characteristic. Such is a brief statement of his conclusions; and I must own that I have been much struck by the perusal of his elaborate papers, as elucidating some hitherto unexplained characteristics of Etruscan art. And the sight of the old relics exhibited in the gallery at Florence—which forms a communication between the Uffizi and the Pitti (like that between the Castle of S. Angelo and the Vatican), and now stored with ancient cippi—and the wondrous collection at Perugia, and the tomb of the Volumnii there (noticed formerly by our Fellow Mr. G. L. Taylor, in a paper read at the Institute), to my mind confirms the Cavaliere Poletti's startling theory.

There is considerable activity, as I have already said, evidently in progress in Italy. Turin, Milan, Bologna, and Florence, have large operations in progress. The Signor Coriolano Moriti, deputy to the Italian Chamber, engineer and architect to the municipality of Bologna, has been widening some of the principal thoroughfares, introducing an English square with a garden in the centre, and erecting a National Bank and other considerable buildings. Florence is engaged upon its new suburban extensions, which, however, in point of artistic treatment and convenient disposition, are ill-judged. Imagine series of very small, and comparatively low, rooms in such a hot climate; and windows so high from the floor, that there are three or four steps to enable you to mount, in order to look out and get a peep at the street.

I must reserve further details for another time. I trust all is getting on satisfactorily at our Institute, whose interests I am advocating here unceasingly. I hope you are pleased with the new appendix to the catalogue, and that it has been carried out in conformity with the resolution of the Library Committee just before I left England. I shall remain here another month, and should be delighted by a letter from you. Believe me

Ever your very sincerely attached friend,

THOS. L. DONALDSON.

ON THE CRITICISM OF ARCHITECTURE.

By E. Ingress Bell, Associate.

In submitting to you the following observations on the criticisms which architectural works at the present day receive, I feel that some apology is due from me at the outset for having taken upon myself to introduce to you so wide and difficult a subject; seeing that I neither possess nor pretend to any special qualifications for the task. But it is thought that the subject is one which may with peculiar fitness be discussed at this time. We are now, as it were, on the threshold of our new home; the galleries at Burlington House, which have been erected for the reception of our contributions to the annual Art-Exhibition, afford facilities for their display, and for bringing them to the notice of the public, which have been hitherto beyond our reach:—for the limited space at Trafalgar Square told more fully against architecture than against any other branch of art, and the Architectural Exhibition, which was established to meet this difficulty, has failed, so far as I am able to form an opinion, to reach the general public at all. The time appears to have arrived when our claims to the consideration of the public will be brought before them in such a manner and under such circumstances as will ensure a wider recognition: it is important, therefore, for us to consider by what means they may be best advanced, so as to ensure that a truer estimate of them may be formed. To this end I have ventured to offer you, with the greatest diffidence, the following observations; in the hope that if they be but of little value in themselves, they may at least clear the way to a profitable discussion.

It should be stated that the following remarks are not intended to apply to any of the able critical treatises which have from time to time appeared. It would be impertinent in me to criticise the works of those whom I recognise as teachers;—besides, I am not now concerned with the criticism of any particular system, but with the want of any system in criticism. My business is with the press-criticism of the day—the notice which the current periodical literature accords to architectural subjects.

It will no doubt be conceded that competent, honest, fearless criticism of architectural efforts is, if not absolutely necessary, at least desirable. Journalists are careful to tell us from time to time the enormous power exercised by them through the public press, and it is in art matters that this power is capable of being most usefully and widely applied. The majority of the public, glad to be relieved from the labour of independent thought, form their opinions, on this and many other subjects, second-hand, and follow implicitly the guidance of those who take upon themselves to exercise the functions of experts. Hence a wise application of the power which it is competent for able criticism to exercise will have a marked influence on the art progress of the age.

As a reward to conspicuous excellence, and an encouragement and stimulus to the ambition of younger men;—as a terror to evil-doers, and an instrument for the exposure and repression of charlatanism and incompetence;—as the means, and if not the only means, yet the readiest and completest, for disseminating and fostering an appreciation of art;—the value of just, scientific, wholesome criticism can scarcely be over-estimated.

It will not be without profit if we can discover in what degree the press-criticism of the day fulfils these conditions. We should divide the vehicles for the expression of critical opinions into profes-

sional and non-professional. The professional papers cannot, it is thought, be said to reach the public—their influence, such as it is, is confined almost entirely to the profession, and any influence they may have with the general public is indirect. The non-professional papers, it may be assumed, have but little influence with the profession, and for this some reasons will be given by and by.

And, first, of the influence of the professional papers on architects.

It must be remembered that the observations of the professional critic are addressed to men who profess a competent knowledge of their business; men who have passed through a course of training more or less severe, and who hold in many instances positions in the profession which have only been attained by the exercise of at least average ability. It is surely not too much to expect that in pointing out alleged defects in the works of such men as these, some reference to principles, and to received canons, should be made; and that the tone of courtesy which would moderate the verbal criticisms of a work expressed in the author's presence, would also, to some extent, appear in the anonymous notices which issue from the press.

I have now the honour of addressing an assemblage comprising many of the foremost architects of this kingdom; and I ask whether you accept, whether you profess to accept with confidence the utterance of those who week by week write for your instruction and guidance. What new lights have you gathered from their teaching? What errors have you abandoned at their instance? Have you felt constrained to bow to their decisions, and to accept their strictures as at the hands of teachers more learned, more practical, more practised than yourselves? Do you feel a sense of their superiority, their fitness as teachers from their calm and forcible exposition of principles, and their apparent earnestness and judicial impartiality? Are you able among the conflicting theories of the various art critics to deduce from their incompatible elements any reliable assistance, any fresh truths? Do the young receive sage counsel and guidance, and the more experienced gentle though merited reproof? Or do you not for the most part see only chance and hasty judgments varying with the fashions of the hour—following rather than leading the professional taste—off-hand—contemptuous—unsupported by reasoning, and wanting the weight of wisdom?

It must rest with you to say. If you recognise in them the able leader, the wise counsellor, the impartial judge, the considerate friend—these remarks will have been written in vain.

As to any beneficial influence of non-professional papers on the general public, I am afraid that the work has yet to be commenced. Has the criticism of architectural works resulted in inducing an admiration and appreciation of architecture apart from any qualities which appeal to the vulgar mind? Has criticism educated the public to a discriminating selection of unpretending, but meritorious efforts? The answer, it is feared, must be that at the present time the public care little or nothing for the architecture that has not some vulgar or startling attributes to recommend it. They do not enter into our discussions—they do not sympathize with our difficulties, nor appreciate the nice distinctions which disturb us so much. They leave us to our "Battles of the styles," and "Pleas for Gothic," and "Shall Classic have fair play," and contentions of all kinds, and being without the enlightened interest which would prompt them to enquiry, they conclude apathetically, that architecture is an affair beyond their province," and so they leave it. If this be so, if the vaunted power of the press has failed to remedy this state of things, the causes of its failure are worth considering.

Now criticism should, in the first place be honest. Well, I am glad to think that we may admit that, in the main, it is so. That we have seen able periodicals throw themselves into the heat of party contests, and insist on the merits of their favourite designs with an earnestness and perseverance, and that "pertinacity of partizanship," which points, perhaps, to some feeling stronger than impartial conviction; that we have witnessed occasionally attacks upon able works conducted with fierce and unre-

lenting ridicule indicative of the possibility of personal animosity, may be taken as the exceptions proving the rule. We may, I think, safely say that the expressions of critical opinion are generally honest, and admit that there is greater danger of their failing of their end through a want of plain speaking than an excess of it. But of the incompetence of the criticism of the day, we have had strong opinions from qualified judges. Mr. Lewis says that of criticism generally, it may be questioned whether it has not wrought more evil than good. Competent criticism can scarcely work for evil, so that his remark implies that for the most part criticism is incompetent. Mr. Dallas in his "Gay Science" says that even taking the *best*, and omitting the worst altogether, criticism "yields no where the sure tokens of a science," and that it can only be said to be a luxuriant wilderness, and he refers the notable failures to obtain great results in art-matters in this country, by the offer of large pecuniary inducements, to "the uncertainty of judgments, the waywardness of taste, the want of recognized standards, the *contempt* of criticism." It is as a house divided against itself. It does not speak with the authority of unanimity on the points on which it professes to teach, and while it is not accepted by the profession, which it is intended to guide, to encourage, or to restrain, it fails to educate the public, who would readily accept a reasonable and consistent doctrine.

One cause of this incompetency may be that for the most part the "gentlemen of the press," who amongst other duties take upon themselves, upon occasion, to provide the public with opinions on art-matters, are literary men and nothing more. Able, versatile, brilliant, enchanting writers but writers only. They deliver judgments upon art, science, politics, social questions, everything that comes in their way, with a glibness and self-possession which follow their assumption of infallibility. They call to one's mind, as the type of the class, no less a man than Oliver Goldsmith, of whom we know it is written that "he left no class of literature untouched, and touched nothing that he did not adorn" (nullum fere scribendi genus non tetigit, nullum quod tetigit non ornavit)," but they force one also to remember that of this same writer it was said by his illustrious friend, that "he would write a Natural History, as entertaining as a *Persian tale*, although it might be doubted whether he knew the difference between a horse and cow." Here knowledge of his subject is not a first necessity, with a writer of this calibre, for the production of a composition of surpassing beauty as a composition. But for the critic, the teacher, hear what Mr. Mathew Arnold, standing in the front rank of the thinkers of the age says. "*Judging*," he says, "is often spoken of as a Critic's business, and so, in some sense, it is: but the judgment which almost insensibly forms in a fair and clear mind, *along with fresh knowledge*, is the *valuable* one:—and thus knowledge and ever fresh knowledge must be the critic's *great concern* for *himself*, and it is by communicating knowledge and letting his own judgment pass along with it that he will generally do most good to his readers." I fear that we may look in vain for criticism of this quality, and that the broad and flowery path of "judging" is taken instead of the narrow and difficult ascent to fresh and ever fresh knowledge.

In forming this estimate of the writers in the public press, I do not pretend to have been aided by any acquaintance with the secrets of the craft. It is difficult to read the articles on architectural subjects which one finds in even the higher class of periodicals, without detecting certain slips, certain indications of an imperfect acquaintance with the technicalities of art. Certain tendencies to confusion of styles and periods, and a hesitating treatment of purely professional points, betray to the professional reader that the critic is not really "at home" with his subject. As an instance of the type of indications above referred to, I read the other day in the account of a new building, that it was in the classic style, that it was ornamented with a Corinthian order, consisting of two columns and two pilasters, and by way of additional information it was stated with a kind of "regardless of expense" sort of air that the columns would have "*ornamental* capitals." This is a trifle, but these

are the kind of "straws" which "show which way the wind blows" in criticism of this class. That they who sit in judgment upon our works are gentlemen of education and refinement is not denied; but that the majority have a sufficiently practical acquaintance with art questions to constitute them safe teachers and guides is open to grave doubt. They look at us and our works from the outside, partly, as we shall see, through our own fault; and they cannot render us full justice because they cannot appreciate our difficulties.

There is, in short, a tendency in their compositions to look too much to style, and matter is sacrificed to manner. Any scrap of thought or "fresh knowledge" is beaten out so thin, and enveloped in so much that is merely extraneous and ornamental, that the fancy is beguiled, whereas the mind is not fed. We are treated to delicacies instead of nourishment, and, as Goldsmith says, "they offer us ruffles when wanting a shirt." And this from their want of identity with us and our aims. The connoisseur, says a great living critic (would we had more such!), can recognise the *beauty* of Titian's flesh tints, but to the artist only, whose multiplied hours of toil have failed to reach the least resemblance to one of their tones, is the *value* of them known. The want of special art training, and acquaintance with the practice of art, may be taken as one cause of the failure of the criticisms of these days.

A second cause may be referred to the absence of recognised standards. There is a remark in one of Mr. Ruskin's works, although I cannot now lay my hand upon it, and his language will lose force by my rendering of it from memory, to this effect:—Mr. Ware writing from Italy, says of St. Mark's at Venice—"Mr. Ruskin thinks this a very *beautiful* building; I think it a very *ugly* building." Here the noticeable point is that Mr. Ware settles the matter with an "I think"—and, adds Mr. Ruskin, he is right:—"There is at present no other standard to which either he or I can refer." To estimate the force of this remark, let us set beside it an extract from a work of the most successful and accomplished architect of his day—Sir W. Chambers. "No subject," he says, "hath been more amply treated of than architecture, nor any by persons more capable; insomuch that few things remain either to be discovered or improved, every branch of the art having been maturely considered and brought very near to the utmost degree of *certainty* of which it is capable."

Reflect on the amazement which such a statement would cause if now uttered by any architect so distinguished in this day as Sir W. Chambers was in his, and you will feel how true it is that we are devoid of recognised standards of reference in disputes on architectural questions.

A third peculiarity in the press-criticism of the day is, that it expends itself almost exclusively on pictures of proposed buildings, designs, and projects; but that as soon as the projects become facts they seem to be no longer recognised. A series of designs, as we have seen over and over again, shall be hotly discussed by a considerable number of periodicals, and that too with an eager scrutiny which seems unaccountable when you reflect that no sooner does the building become a fact than it drops out of notice altogether. We have recently seen a collection of designs for works of unusual magnitude and importance enlist the sympathies and occupy the pens of numerous writers, and we have wondered at the crowds of curious visitors who for weeks thronged the galleries in which the designs were exhibited. We have also witnessed the completion of works of very considerable magnitude and importance; and it is instructive, and will I think corroborate the opinions before expressed, to reflect on the comparative indifference with which they have been received. It may be objected that the critics eagerly exercise their functions while there is still time to make their teaching felt, and give effect to their advice and warnings, and that an executed building, as it is beyond reclaim, is beyond their care; still this reason can scarcely be accepted as the true one. Trustworthy lessons can only be derived from executed works, which are, whether for imitation or avoidance, incomparably the best examples.

The real explanation is, that while the public care little or nothing for architecture, they care a

great deal for pictures, and they "do" these exhibitions (when they are sufficiently attractive) of architectural works with the Academy, Water-Colours, and the rest of the round.

If in the dull season, when the columns of the newspapers are agape for "padding," a building of sufficient importance is singled out for notice, we get little or no real criticism of it. Its excellencies are not pointed out for imitation; its defects, if not of the most glaring kind, are not dwelt upon. We trace no longer the hand of the masterly, brilliant writer, who gave us his views upon it when it was a mere possibility. It has now become a fact, and has passed out of his province. The wondrous tale is taken up by another, and a reporter's hand. We are treated no longer to the entertaining and discursive generalities on the art which the abler pen provided for us; but dry facts, statistics, the numbers and sizes of rooms, cost, names of contractor, gas fitter, &c. &c., so that the whole thing reads rather like an advertisement than anything else.

Whilst on this branch of my subject, I may perhaps be allowed to offer a few remarks on the anonymous character of criticism—a question which has received consideration on more than one occasion; and though the arguments for and against it have not wanted able advocates, no general election has yet been made between the systems of anonymous and avowed criticism. The majority of periodicals still adhere to the former; but some of the more able and recent ones adopt the latter. I cannot but think that art criticisms should be authenticated by the name of their author, and that those of the better class would thus gain in value. The opinions of men of acknowledged repute would command respectful attention, and a check would be given to a good deal of irresponsible and offensive flippancy which is now too prevalent. One, and the strongest, objection to the avowal of the authorship of the articles in the ordinary newspaper and review is, that the writers hold positions which would be affected by their being acknowledged as journalists. It is said that barristers, looking forward to a great career in perspective, are, for the most part journalists; and that their hopes of future success in their profession would be dimmed if they were known to fill up their unoccupied time by contributing to the public press. This objection could scarcely obtain in art-criticism. It may be urged that it would be invidious for architects of acknowledged repute to provide the public with an estimate of the merits or demerits of the works of their fellow architects; but I am not advocating the expediency of practical architects turning critics. I only want to point out the necessity of some practical acquaintance with architecture for competent criticism. We have a conspicuous example in the sister art of painting, of an accomplished artist devoting his energies to criticism, and the value of his critiques is due in great measure to the well-known fact that he has himself a practical acquaintance with all the capacity and all the difficulties of the art which he expounds.

And there are, as we know, architects by training who nevertheless devote themselves to the literature of art; to them both the profession and the public would be grateful for contributions to press-criticism, and their articles would certainly gain rather than lose by the addition of the authors' names. It is feared that under the contrary system their place is filled by men of small repute and ability except as writers, whose oracular utterances are delivered with a self-assurance inversely proportioned to their capacity. I have adverted to the suggestive fact that the critics of the day expend their energies upon the exhibition of architectural drawings rather than upon completed works. I may perhaps be allowed to enlarge briefly on this topic. The greater notice accorded to architectural pictures than to architecture, results, as it appears to me, in an encouragement to bestow more labour on clever representations, or misrepresentations, of architecture than on the production of admirable buildings. If this be so, architectural exhibitions as now constituted are amongst the foes to real progress in architecture. The demand for these exaggerated representations of architecture which lead to such disappointing results in execution, is fostered by the system of "competitions" which has now become almost

universal; a system which is, in many respects, antagonistic to the real interests of architecture. And the result is the production of drawings whose aim is to attract, by some specious attributes, which may catch the uneducated eyes of those to whom they are designed to appeal. If a building is too much cut up, the detail too busy and redundant, the professional colourist passes his broad wash over it, and conceals the objectionable ornament. If it is too tame and dead, he, by the aid of broken sparkling lights, weather stains, blots of body colour, &c., "cooks" it to attract the eye, and the drawing being pronounced satisfactory, no attempt is made to supply what is required to compass a similar satisfaction in the reality. The result is, what we are all complaining of, that the architecture of the day is characterized by "superficiality."

A practice arose in the 16th century of designing, what we call a façade, independent of the necessities of plan, and in fact frequently in direct opposition to them; the structural conditions of the building were rendered subservient to the exigencies of external appearances. And the construction of façades or false fronts became at last so entirely the first consideration that no compunction was felt; it was in some cases considered a merit to design them in a different *style* of architecture from that of the building. In a critique on the works of Palladio, I read "that a great amount of study was bestowed on the elevations of his buildings, so much so that they *mask* but indifferent interiors." That even when he had to contend with the *Gothic* at La Ragione, how skillfully has he screened its *barbarism*, by a Roman elevation. Compare Le Duc, who says that neither the ancients nor the architects of the middle ages, could conceive the idea of a façade. That to them it was unknown. They had no conception of masking a building by a screen which should be a composition independent of the structure and designed as a thing *per se*, and solely to please the eyes of the passers by. The elevation of a building, was as he points out, the result of the disposition of its component elements of plan, and it exhibited to the view gables and sides according as the various sections of the building were placed longitudinally or transversely.

Now, the practice of designing false fronts was even better, though somewhat akin to, our practice of deluding ourselves with false representations. But when, as it now sometimes occurs, we get a false representation of a false front, a sham view of a sham building, the evil is complete; and as art and criticism act and re-act upon each other, the possibility of such conjunctions as above hinted at gives rise to the possibility of such critical advice as the following being seriously offered.

"A piece of architecture in which there are any manifestations of genius is worked out in the same manner as a poem. *Invention* or the ground *idea* of the subject *must come first*, and it is to this conception of the *fancy* that technical skill is afterwards to be applied, so as to work it up, and to render practicable in construction what is originally the mere apprehension of beauty. *This is the only true* process."

It would be difficult to add a stronger illustration of the absurdities to which a mistaken conception of our art may lead, and of this pernicious tendency to regard architecture as a something apart from the outcome and development of true building.

And now, gentlemen, I confess, I feel sensible of the want of that literary art which I have perhaps appeared to depreciate unduly. I feel that the foregoing remarks have been put before you in an incoherent and fragmentary form, and without that roundness and completeness which I could have desired. I have attempted to show that our art criticism is without the weight it would have if scientifically conducted: that our critics are mostly literary men only, without proper training, and that their efforts are directed mainly on the shows of things which are more or less illusory, rather than on the realities, on the representations of projected works rather than accomplished facts. And, I now beg, in conclusion, to sketch in outline what I would have our architectural exhibition to be. I

would have them to possess some distinctive character which should remove them from the category of picture exhibitions only, and show that their contributors had a desire to earn a reputation for something nobler than that. I would have the arts of construction represented fairly and completely, so far as they are applied to architectural works. I would endeavour to find in them a vehicle for conveying to the public the idea that architects are, and ought to be, what has now come to be understood by "engineers," with the added faculty of rendering *comely* the necessities of building, and above all, to enforce the doctrine that architecture to be worth considering at all must be a refinement of the natural outcome of its structural conditions, embodying the requirements of the age.

A sound school criticism would greatly help to procure so desirable a consummation, but for such a source of strength and guidance, it is to be feared, we must look in vain.

Though young men are said to be sanguine, I confess I cannot look on the present and future condition of our art without apprehension. We are prone to be rendered insensible to our true condition by our own self-gratulations: but if we look about us what do we see? A living writer says that up to the 16th century, no instance can be found of any building having been erected in imitation of any other, and that since that date no building has been erected, except as a copy, open or covert, of some buildings or class of building that has gone before—a reflection as discouraging as it is unfortunately true.

In place of the health development of sound principles by concurrent action, and in logical sequence, we see great power, both individually and in the aggregate, working without discipline, object, direction, or restraint. We are, as men beating the air. The current of our lives is diverted and dissipated, and the strength is wasted in a ceaseless hunt after change, which should be concentrated on the achievement of definite results. When the Classic spirit decayed, the Gothic revival engaged our attention, and our buildings, as measured by the archæological standard, were sufficiently correct and satisfactory. A chance work of exceptional power and ability, turned our attention to the brick and marble architecture of Italy, and we threw ourselves *en masse* into the repetition of the details and parti-coloured decorations and brickwork of our models. They have now been relegated to the speculating builders; and France (the early Gothic of Normandy) has, mainly by means of a publication of meritorious sketches, being next pressed into our service. From Spain, lastly, we have received fresh inspiration, and the next weakness may be for Moorish or Indian art.

In this condition, is it not the most fatal step we can take to abrogate or suppress our claims to be considered *primarily* as able constructors. Architecture has long since been separated from painting, and although there may be now architects who could adorn their own buildings with frescoes from their own hands, the instances must be few. Let us not appear to abandon that scientific excellence which must be the foundation of all our art excellence.

An illustrious architect said not long ago in this room, speaking of a building of unusual magnitude now in course of construction, that he was only responsible for the decoration of the roof. There, in a small compass, is the danger of the tendency of modern architecture. There is growing up around us a vigorous sturdy profession of utilitarian aims, which is already encroaching on our prerogatives, and the ugliness of the most noticeable modern engineering structures is a witness at once to the bad taste of their authors and the apathy of the public. One by one the real opportunities for grand, imposing, noble architectural works, are slipping through our hands, and as we have abandoned the higher walks of art, and have been robbed of our arts of construction proper, our position suggests the story of the prisoner who, confined in a cell of which the boundaries were contrived to approach each other by imperceptible advances, was at last crushed to death between them.

If the views to which I have ventured to call your attention are sound, if I have succeeded in

showing that, firstly, our critics are mostly superficial and incompetent exponents of our art; that secondly, our exhibitions have a tendency to mislead rather than to guide ourselves and the public to a full acquaintance with the real aims of art; and lastly, that we find as a result the engineer is rapidly encroaching upon our proper domain,—I shall feel that, though I could heartily have wished that the task had fallen into abler hands than my own, yet, that your evening will not have been entirely wasted, and that my labour will not have been wholly in vain.

Mr. Edwin Nash, Fellow.—The few observations that I will make will be quite inadequate for the support of the vote of thanks which I propose to Mr. Bell for his very able paper. Architectural criticism has always appeared to me to be one of the most difficult operations of the pen, and being so, I am sure that if some rules of criticism could be laid down, they would be very serviceable. I am not myself able to lay down those rules, but Mr. Bell has pointed out a few items in that direction, which I think are somewhat valuable. I am only going to notice one or two of the points upon which he has touched, and the first I will refer to is that of Architectural Exhibitions. It is true, as Mr. Bell says, criticism is spent chiefly upon exhibitions, to the neglect of executed buildings, which is to be deplored, because there are many fine executed buildings which would bear even a short and graceful essay upon them with advantage. Architectural Exhibitions can never, I think, become what exhibitions of paintings are. We are not executors of pictures, and I think there has been some mistake on that point. It is supposed by some, that architects are fond of making pictures for exhibition, but it is often very tiresome and inconvenient to have to do this when engaged in the practical work of an architect; and it is evidently found to be so, for more than half the architects never exhibit at all, and I believe it must continue to be so, because architects do not make pictures for sale as painters do. It is their business to exhibit pictures. It is not our business; nevertheless, I think it important that architectural exhibitions should be encouraged. Then with regard to engineering, upon which we have had some good observations, I may observe that, it is to me quite a mistaken idea to call architectural construction engineering. Building is not engineering; yet some writers, and a very accomplished one, who is well known in this room, publishes that sentiment—that construction is engineering. I say that construction is no such thing. Let engineers keep to their engines, and if they execute buildings, they are then architects, and not engineers. And an architect, if he has not sufficient practical education to make him a good constructor, is no architect at all, and the sooner we cease to call construction engineering the better. On another point alluded to, I do not quite agree, viz.: that the buildings of the present day are mere imitations of the old, for we have many buildings designed honestly and positively for the purposes for which they are intended, and irrespective of any other view, with the gusto of architecture thrown into them after they have been so designed. Therefore, I hardly think the observation is applicable at the present day, though it might have been formerly. I should have liked Mr. Bell to have laid down—he apologized for not being able to do so quite—some more definite method to be pursued in architectural criticism. It is the great difficulty of the subject that makes it almost needful that something should be done—some general rules, not absolute rules established, that would tend towards a proper system of architectural criticism. I beg, in conclusion, to propose a vote of thanks to Mr. Bell for his paper.

Mr. R. Phèné Spiers, Associate, remarked that the subject of Mr. Bell's paper might be divided into three parts. The first part treating of Architectural Criticism; the second of Modern Architecture generally; and the third of Architectural Exhibitions. With reference to the first—architectural criticism, Mr. Spiers said, Mr. Bell has, I think, correctly observed, it is in consequence of the very small knowledge of architecture which is possessed by those who take upon themselves the

office of critic, that architectural criticism is bad. Of course, this is not only felt in architecture, but it is the same with painting and sculpture, that their exhibitions are indifferently received as a rule. The system of writing employed by critics is flippant and clever, rather than calculated to define what are the merits or demerits of pictures, and this has been noticed before at different times. With architecture there is still greater difficulty, because it has generally been allowed, although there are many who have some idea of what good painting is, and what good sculpture is, there are but few outsiders who have any knowledge of what good architecture is, simply because it depends not only on pleasing form and artistic expression, but also on its constructive qualities; and unless the criticism of buildings is taken up by those architects who devote themselves to literary work, I do not think we can look for much improvement in architectural criticism. At the same time, it is interesting to know that while in England we have reason to complain of such criticisms, in France such is not the case. Architectural exhibitions are held continually there, and for the last three or four years I have been in the habit of reading the criticisms upon them, and I have been surprised at the amount of knowledge displayed by men not practitioners, and who have acquired the power of criticising architecture from a long acquaintance only with architectural matters; so that it is a fact worthy of notice, that criticisms on architectural affairs abroad are immeasurably superior to those which we find here. One of the most noticeable points in French criticism is—that the style is not mentioned. It is not considered necessary to say what style a building belongs to. It never occurs to a French critic to say it is the style of Napoleon the Third, for instance. Of course there are cases in which a building has been produced in the Moresque or Turkish, or some other special style, where an attempt has been made to reproduce works of bygone ages; but this is only a freak of the client. I recollect a competition lately, here in London, in which after having an account of the whole building from the architect, the intending critic asked what style he was to say the building belonged to. The architect (whose name we will assume was Smith) replied it was his own style; we cannot very well say the "Smithesque" replied the critic. "Well, call it the French-Gothic, with early English feeling" and in accordance with his wish was the criticism written. No doubt this power of criticism in France is acquired in two ways. In the first place, any one who takes position in France is instructed in some way in art; therefore, so far as art is concerned, they can criticise it; and as a rule, the French attempt to invent constructive forms in harmony with good artistic expression and with the construction itself, and these critics mixing much with architects draw from them what are the main constructive principles to be observed. On the next point, viz. Why are our architectural exhibitions so defective? Mr. Bell says, what we see there are pictures, not architectural drawings. Why is that? Because, as a rule, architectural drawings sent for exhibition are not made by architects themselves; many are made expressly for competitions, and these drawings are coloured up by men who have sometimes a knowledge of architecture, and sometimes not. They devote themselves to architectural colouring, and the result is, the works they turn out are very beautiful, but exceedingly unarchitectural, and as a rule, exceedingly unreal. The reason why architects go to these men for their drawings is because, with certain laudable exceptions, they are not themselves sufficiently skilled in drawing; that is, they have not passed through that serious study of drawing (whether beneficial or not I will not now stop to enquire), which is passed through by the architects of France and Germany. Whether it is a serviceable thing that they should arrive at that perfection of drawing is not the question now; but it is the fact, that at the Paris Exhibition of 1867, all the French drawings were executed by the architects themselves, whereas the names of the English architects who executed their own drawings might be counted almost on the five-fingers. There must be some better system of teaching drawing and colouring than we have at the present moment. As long as architects trust to getting up a showy set of drawings in

order to obtain a competition, we shall have pictures and not architectural drawings. We have tried in the architectural exhibitions to get drawings and not pictures, and we have had great trouble to get them. In the first place, architects as a rule, do not make drawings that can be exhibited; they are on the one-eighth scale, and very roughly drawn for the builder. In the case of the French drawings, done to half-inch scale to the foot, they always make drawings of that kind for the purpose of study, and they have none to exhibit. Of course, the exhibition down stairs is not for outsiders. We have attempted to make it interesting to the public, but the result has been below our expectations, and as a rule, it is visited only by architects, and therefore it ought to be made as architectural as possible. Architects here do not study drawing by any system as they do abroad, and until there is some change in that we shall have indifferent architectural exhibitions, indifferent architectural drawings, and indifferent architectural criticism.

Mr. JOHN P. SEDDON (Hon. Sec.)—In my opinion, the one thing wanted is proper instruction of the public in art generally. Until that is given, there will not be the demand for architectural or other beauty which the profession is, or can make itself, quite competent to supply. The public is wofully uninterested in architecture, and it is only through art it can be reached. People must be taught to draw, and to know and appreciate what beauty is, and then they will look for it in buildings. With regard to criticism in architecture, it ought not to be expected from architects themselves. At present, however, it really does generally come from them in default of any other source. The public being indifferent to the matter, there is nothing to induce men to turn to criticism as a profession. Some amateurs, as Mr. Ruskin and a few others, have indeed taken up the study of architecture for the mere pleasure of it, and have devoted to it the time and energy requisite to fit them to undertake such a task, but it cannot be expected that they should turn attention to criticism as a profession. I would repeat, therefore, what I began with—that what is wanted, is instruction of the public in art. I trust, the efforts which are being made by the Society of Arts in that direction, will tend in some way to supply the deficiency.

Professor KERR, Fellow, said, The subject before us I take to be architectural criticism in particular, rather than artistic criticism generally, and we must at the present time, feel especially obliged to the gentleman who leads this Institute to the discussion of that subject. Let me remark, as a preliminary observation, however, that I regret to find in the paper, various quotations and allusions to authorities without any statement of the names of the parties referred to. This, I think, is a mistake, inasmuch, as it has prevented us from attaching to those opinions at the time, the precise value to which we are accustomed, in view of their authorship, and it moreover prevents us from judging of the accuracy of the interpretation which is implied by the lecturer, because of the allusion not being precise enough to enable us to check from memory the quotations. To turn, however, to the subject of criticism, and more particularly with regard to architecture, one may say there is no subject of a theoretical kind in which this Institute should feel more interest. What is criticism? It is the act of judging a finished work by the application to it of those principles which have governed, or ought to have governed its design or performance. In that primary sense of the term, nothing can be simpler in theory than criticism. An artist, for instance, in the composition of his work, is supposed to know the principles by which he is composing it; and accordingly another artist (and none but an artist can thus far criticise art) is supposed to understand equally well the same principles; and therefore, to be able to apply them from his own point of view, to the finished work, and thus to say whether it is rightly or wrongly, in his estimation, that they have been applied by the designer from his own point of view. Now, criticism being in short a process of trial and judgment applied to everything belonging to artistic effort,—and indeed, to effect of many other kinds,—if we confine our-

selves to art, we may say that in respect of painting, we are at the present moment in a condition which, as regards principles of opinion, leaves little to be desired. I apprehend no man is capable of painting a picture in the present day which shall be appreciated by critics, that is, persons experienced in painting, unless he has applied to the composition and treatment of the subject certain principles which, if not unanimously accepted, certainly are well understood; and his own apprehension of the subject can therefore be so perfectly appreciated by his colleagues, that it would be mere folly to pretend to disregard their decision and set up some new and unknown standard. It is the same with sculpture. Perhaps indeed, the criticism of sculpture may be even more definitely matter of law, almost of exact science, than that of painting. Then, if we resist the temptation to allude to music and poetry, these being arts from which our own is very distinctly connected, and so come at once to architecture, in which alone we have a direct interest to-night, I may point out at once that what are called the principles of criticism in architecture are simply those principles under whose government architecture is composed; and the act of what is called criticism is nothing more than the application of those principles in the form of direct examination of cause and effect; such criticism including, be it it observed, not fault-finding alone, or sentence of disapproval on all demerits, but approval, a much more difficult thing to deal with, intelligently pronounced upon all merits in their degree. To repeat once more, architectural criticism is literally an operation of trial, by recalling to view the correct principles of the work of architectural design in order to prove whether the artist has used them well or ill. I agree with the lecturer, that the condition of architectural criticism at the present moment in this country is lamentable. As for the criticisms, so called—for criticisms they are not—the flippant, vain and foolish witicisms which we so often see in the meaner order of newspapers, we architects can only wonder at the moral courage they display. Again, as for the remarks made in the House of Commons by gentlemen who, standing on their own ground, are open to contradiction only amongst each other, all equally uninformed,—as for those remarks, generally—too generally—of almost the same flippant and certainly most unlearned character, we can only say that whilst we must submit with a certain amount of respect, we at the same time can never accept them, as they are intended to be accepted, as evidence of accomplishment in the speakers. But when we come to the definite criticisms of the architectural periodicals upon architectural works, then, I think, we are entitled to expect something more than this, and to look for clear and intelligible explanations of the views of competent writers upon recognised ground. What then is the ground of architectural criticism? Primarily its principles are of course elementary; that is to say, there are certain motives lying at the root and foundation of the whole structure of architectural design, which motives are recognised and followed by the designer, although, perhaps, unconsciously. When I say recognised, I mean so far as his own operations go: he proceeds instinctively upon definite and distinct principles, of which he has acquired the spirit, and respecting which there could be no dispute if they were fairly systematised; and the elementary criticism of which I speak, would be the application of those primary principles as rules or natural laws to see whether the designer has really followed them in his work. Such are the principles which I ventured to indicate in some degree, or rather so far as the occasion admitted, to shadow forth in their nature and application in the lecture which I had the honour to deliver here a short time ago upon "The Architecturesque." Primarily, such is the kind of ground work,—the basis elementary,—which lies at the foundation of the whole structure and system of architectural design. But, as we cannot be always referring back to the simplicity of such elementary principles for practical criticism, we use secondly what may be called dogmatic or academical principles. These are general laws derived from long experience of the elementary principles,—affording rules which one can apply as a short road to the same result, which would otherwise

have to be reached tediously by going over the whole of the elementary ground in every case from the beginning. Permit me to say, Mr. Vice-President, that you and I, in our younger days, were made acquainted with some at least of such dogmatic principles. We both remember the time when *The Civil Engineer and Architect's Journal*, was the organ of the profession; followed by the early days of *The Builder;* and at that period, you will remember, there would be quoted certain accepted principles of architectural criticism, which did not admit of contradiction, and which are still accepted if they were not overlooked, by means of which the reader of the criticism could be led to form very much more intelligently than now, a judgment of the precise value of the work under review. It is, of course, still dogmatic criticism which is now applied; but it is merely archæological. I do not complain of it for one moment, when I recollect that it is applied to art based upon archæological purpose; archæological art of course brings archæological criticism. But, Sir, though you and I may not remember the time when art was not antiquarian, we do remember the time when art was not archæological; and it is to the credit of the old antiquarian *dilettanti* that their principles were certainly not of the same non-artistic school as those accepted in the present day. Such then being the nature of and present condition of architectural criticism, what is to be done in order to endeavour to establish a better state of things? It is clear, that designers cannot go upon the archæological system for ever. The time must come when it will prove to be exhausted; and the time, I think, is perhaps not far distant when, in this country at least, the archæological system will begin to be at least suspected of being a delusion. What is to happen then? This very much depends upon us. One thing at least we ought to do. We ought in the meantime to educate our youth in the principles of elementary criticism; and this indeed I think, is the only way out of the difficulties which the lecturer has enlarged upon. It is a pity that practical architects have so little leisure and inclination for writing on their art. The embarrassment with which a non-professional writer has to deal in speaking of architectural matters, is almost unparalleled in other literature. It is, indeed, specially manifest in the works or the two most prominent architectural writers of the present day,—Mr. Ruskin, and Mr. Fergusson. The writings of the former gleam and glisten with poetic imagery and fancy, but he never can reach the most essential *fact* in architectural knowledge, viz.—that architectural art is based upon mere building, that it has its foundation upon the apparently common-place and unimportant, but really philosophical conditions of material and labour. That is a thing which such an intellect as Mr. Ruskin's, and so trained, can never hope to descend low enough to reach. His thoughts soar high enough in the poetry of visionary art, because poetry is his business; but they cannot stoop down to the plain prosaic details of the structuresque, because building is not his business. With all his genius, therefore, his criticism of architecture is so far vain. To turn to Mr. Fergusson's works, we see not only a monument of industry, the most commendable, but an instance of success the most astonishing to my mind, compared with any other non-professional writings I have ever read. That a gentleman who, was never brought up as an architect, is able to classify the whole of the productions of the world in this recondite and difficult art, in the complete way in which he has done it, and to educe definite principles of classification, and exhibit as it were a panorama of this vast range of art, with such accuracy as characterises his work, is to my mind, perfectly astonishing. He is the only writer, certainly in England, who has been able to do such a thing with architecture. But still, he is no architectural critic, in the proper sense of the term. With painting, for instance, the case is different; the principles of criticism lie much nearer the surface, and therefore we find many writers who can criticise paintings with partial success, where we find not one who can at all artistically criticise architecture. But if you look closely at Mr. Fergusson's works, with every admiration for his remarkable powers of common-sense, you must acknowledge this,—that after all his labour, he does not descend to the plain foundation of the philosophy of building con-

ditions. His architecture is more or less surface work at the best. It is, in fact, impossible for any man who has not passed through the drudgery of practical architectural business, and the design of practical building, to understand in any adequate manner, the elementary principles on which architectural design ought properly to be based. They are not on the surface, but in the substance within. It is but little, I apprehend, that this Institute can do in the way of providing a better system of architectural criticism. I repeat, with regard to the criticisms of the ordinary press, that we can only say it is lamentable to see otherwise clever writers for the most part so deplorably ignorant of any subject upon which they take upon themselves to write; but the lecturer has also alluded to the well-known fact, that the better classes at large, the educated classes of society as a whole, remain, I may say, intentionally behind the practice of the Continent in respect of artistic, and especially architectural knowledge; and I think we may properly consider how far it is part of the social and educational character of the present day in England, to ignore art as a social accomplishment. We, as architects, may be led personally in our practice to moderate our aspirations in respect of architectural effect, in order to meet the conditions of the day in which we happen to live; but this is not the end. Whether anything can be brought to bear upon public education in the way of increasing the national appreciation of the elegancies and delights of art, I do not know. My own experience has been this,—that those persons taking a lead in public life who profess the greatest acquaintance with art, generally possess the least,—being in fact not only uninformed, but generally very much misinformed and mistaken as to the very elementary principles on which to base criticism; and this being so, I am still more at a loss to know what can be done to improve the architectural education, or indeed, in any form the artistic education of the people at large.

The CHAIRMAN.—I will now close the discussion. So much has been so well said as to leave but little to be added. We are all extremely obliged to Mr. Bell for leading us for an evening into somewhat close consideration of matters which must have often occupied our minds. We cannot help lamenting with him over the difficulties and imperfections which beset such architectural criticism as we are in the habit of seeing, and desiring with him to see it improved. Setting aside our own shortcomings, I cannot help thinking it is almost entirely owing to a want of interest and appreciation on the part of the public works of art in architecture. No doubt it arises chiefly from the difficulty of the subject, and from one peculiarity which attends architectural works, which is, that works of art in painting and sculpture become, as it were, personal property of value, are more easily handled, may be taken home and appreciated, and studied, by those who are wealthy enough to possess them. Such is not the case with art-display in building. That must be visited to be seen, often with some difficulty and cost, and appreciated for the sake of the art alone. With respect to the press, I think we have no great right to complain of it. It faithfully (unfortunately too faithfully) gauges the amount of information the public ask for and care to possess. If there was a greater want of more appreciative criticism, I do not think, with the ability which writers for the press display on nearly all subjects, there would be wanting the same ability in the higher ranges of the subject of art displayed in buildings; but where there is little or no demand for it on the part of the public, we cannot blame the press for not intruding it on its readers. There are other matters connected with the subject well worth deliberation and mutual council among ourselves, but which we cannot enter into at this late hour of the evening, and therefore, I will now ask you to pass the vote of thanks to Mr. Bell, which has been proposed, for bringing his paper before us, which, when it is in our hands, will enable us in a connected form to think over the subject at home, and as far as may lie in our power to endeavour to cure the lamentable state of things laid before us.

The vote of thanks was unanimously passed, and the meeting was adjourned till April 5th.

Royal Institute of British Architects.

At the Ordinary General Meeting, held on Monday, 19th April, 1869, W. TITE, M.P., President, in the Chair.

The preliminary business of the evening having been transacted,

The PRESIDENT said he would now proceed to the important and pleasurable objects for which the meeting had assembled - the principal one being the presentation of the Royal Gold Medal. The Queen's consent to the recommendation made to Her Majesty on the subject had been communicated in a letter addressed to him by Major General Sir Thomas M. Biddulph, Keeper of Her Majesty's Privy Purse, which was as follows:—

"Buckingham Palace, April 8, 1869.

"SIR,

"I beg to acknowledge the receipt of your letter of the 3rd inst., which I have had the honor of submitting to the Queen, and am commanded to inform you, in reply, that Her Majesty has been graciously pleased to approve of the Royal Institute of Architects' Medal being awarded to Professor Lepsius, of Berlin.

"I have the honor to be, Sir,

"Your obedient Servant,

"THOS. BIDDULPH."

Professor DONALDSON then read the following translation of a letter from Professor Lepsius:—

"SIR AND DEAR COLLEAGUE,

"Your kind letter of the 11th April informs me that the Royal Institute of British Architects have done me the honour to recommend to Her Majesty the Queen of England that the Royal Medal should be conferred on me this year, that Her Majesty has deigned to approve this nomination. Not being professionally an architect, and calling to mind the slight services I have been able to render in illustration of certain historical and antiquarian questions connected with the noble art whose progress and development is the great aim of your illustrious Institute, I cannot but feel deeply impressed with the responsibility attached to such a distinction as that conferred by your colleagues. I cannot but recognise the lofty aim and wise resolution to bestow the Medal alternately upon an artist, architect, and a learned man not an architect. It recognises that the perfection of art cannot be attained without science, and that architecture in particular belongs almost as much to science as to art proper.

"But with regard to the selection now made, the fruits of my architectural studies ought to equal at least the affection and interest I feel for this art—parent and chief of all the arts—in order to render me more worthy of the honour I now owe to your too indulgent judgment in my favour.

"I have already sent you a telegram to inform you of the impossibility of accepting your invitation to come to London, in order to receive the Medal in person. The principal reason is that the Easter vacation of the University of Berlin is over, and the courses of lectures are about to re-

commence. Be pleased to present my very humble acknowledgments to the members of the Institute, and accept the respectful compliments of

"Your devoted Friend and Servant,

"RICHARD LEPSIUS.

"To CHARLES, NELSON, Esq.,

"Hon. Sec. Foreign Correspondence."

The PRESIDENT again rose, and said that he had much pleasure in presenting the Gold Medal to the nobleman who was good enough to attend this evening on the part of Professor Lepsius, viz.:—Baron de Schmidthals, secretary to the Prussian Embassy; His Excellency the Prussian Minister, being unable to be present himself. It would scarcely be necessary to justify the choice that had been made, because the European reputation of Professor Lepsius was in itself a sufficient justification. Having been himself for many years a student of Egyptological science, he had all the more gratification in finding that the nomination of Professor Lepsius for this honour had met with the approval of the Institute, and with Her Majesty's gracious sanction. That accomplished gentleman had always been a man of eminence in the Prussian nation and among the Prussian people, and with respect to his acquaintance with Egyptology, it might be added that he was also very well known in England. The President added that a small tract, very ably written, and which he recommended to every one of his hearers, had been published by our own Tract Society, on "The Egyptians," by Sir Gardner Wilkinson, and on "Hieroglyphics," by Mr. Birch, of the British Museum. After speaking of the study of Egyptology, which arose in England at a period within his (the President's) recollection, and which Sir Gardner Wilkinson was among the foremost to introduce to our notice, the President read the following passage from the work referred to (p. 206):—"In the meantime a new student appeared in the ranks, who, after already distinguishing himself by researches into the relation of the Coptic, applied his mind to the systematising of the labours of Champollion. This was M. Lepsius, who in the Annali of the Institute of Archæological Correspondence at Rome, founded by the Germans and English, and protected by the munificence of the present King of Prussia, published a letter to M. Rosellini, in which he critically analysed and arranged the structure of the language. It was the first step in the right direction since the death of Champollion. The study, indeed, had already found a great ally in the support given to it by the Chevalier Bunsen, who, struck by the talent of the young German student, warmly seconded his efforts. Colonel Mure had also entered upon ethnological researches connected with Egyptian history about the same time. In 1839 M. Lepsius visited England, and at a meeting for the purpose, in the rooms of the Royal Society of Literature, the Chevalier Bunsen and M. Lepsius had explained many points of chronological and philological interest." And again, at p. 209, Mr. Birch says:—"In Germany M. Brugsch has chiefly studied the Demotic, while Lepsius, now a veteran, continues steadily to advance various branches of the study."

It would thus be seen that Professor Lepsius had continued zealously to promote this very remarkable inquiry. They knew the value of these wonderful productions of the monuments of Egypt. Those monuments disclosed, as the result of Professor Lepsius' researches, two kinds of writing by the Egyptians—one being the *hieratic*, or shorthand form of inscriptions; the other, the *demotic*, or running hand, which, in the time of the Ptolemys they wrote with as much ease as we now write English. In these writings was contained the history of a people of almost unknown antiquity, a large measure of which they owed to the gentleman whom they desired to honour. But in 1842, and up to 1845, the Prussian Government, with the generosity that characterised that Government in contradistinction to our own, in all that relates to architectural and archæological inquiry, despatched Professor Lepsius

and a considerable staff of assistants to Egypt on a long journey of inquiry. Professor Lepsius was in Egypt for three years, and the results of that sojourn were shown in Berlin in the extraordinary collection of Egyptian antiquities which he had gathered together—remarkable monuments of the ingenuity and learning of the man and the liberality of his government. Our next acquaintance with him was in 1852, when he published his letters from Egypt, in which he gave a very distinct account of the countries which he visited, and a popular account of all that he saw. These letters were translated into English, and attracted considerable attention at the time. Since then he had given illustrations of the wonderful series of pictures on the tomb of Belzoni, or, as it was called, "The Book of the Dead." He had also written the very elaborate work mentioned in the report of the Council, "The History of Egyptology." All these things seemed to present so much interest that he was delighted to find that the Council (though he himself had been prevented by illness from attending their meeting) had nominated Professor Lepsius as the person upon whom the Gold Medal for the present year should be conferred. He (the President) had never had the honour of his acquaintance, though he saw him at the time spoken of in the first extract he had read, but he hoped he might live to see him again, decorated with this medal. He had now the honour to present the Royal Medal on behalf of the Institute to the gentleman who represented the Prussian Ambassador on this occasion, and to beg that in forwarding it to Professor Lepsius he would convey to him their sentiments of respect and esteem, as well as their great gratification and pleasure in the association with this Institute of so distinguished an archæologist and so eminent a man.

The medal having been handed to the Baron de Schmidthals, that gentleman said, after the letter which had been read from Professor Lepsius, he need only express his high sense of the honour which had been conferred upon his distinguished countryman. He was quite sure that nothing short of the discharge of important duties devolving upon him would have prevented Professor Lepsius from attending personally to receive the high honour which had been conferred upon him; and he trusted it would be a means of more closely uniting together the architects of this country and those of Berlin.

Professor DONALDSON remarked that he was in Rome when the intelligence of the award of the Medal reached him, and nothing gave him more pleasure, not merely for the sake of the gratification it would occasion the recipient individually, but on account of the compliment paid to the Prussian people in the person of one of their most distinguished literary men. This Institute had almost from its commencement been in most intimate connection with Prussia, and especially with the architects who had executed the great public works of Berlin. The Prussian Government, it was known, had published a great number of remarkable works upon architectural ornament, and other subjects, and they had always sent to this Institute copies of those magnificent folio volumes, including the great work of Lepsius on Egypt. Therefore, he felt in conferring upon Professor Lepsius this medal, they paid a compliment to one who had nobly vindicated his love of art, and had done much to promote that art; but it was at the same time a compliment and a respectful homage to Prussia herself.

The PRESIDENT then proceeded to present the Institute Medals and other prizes, after which the following Paper was read:—

NOTICE OF THE ARCHITECTURAL AND LITERARY WORKS OF THE LATE ARTHUR ASHPITEL, F.S.A.; FORMERLY VICE-PRESIDENT R.I.B.A.

By Wyatt Papworth, Fellow.

It is no vanity on my part that leads me to attempt to recall to you the merits of the colleague and friend who has so lately left a void amongst us. This memoir from me is entirely due to the wishes of some of his intimate friends, who, considering that they were best acquainted with his life and works, and knowing that I had likewise had the pleasure of a familiar intercourse with him for nearly twenty years, solicited me to use my pen on their behalf in recording the life, character, and works of one so justly esteemed by all who came in contact with him. It was, perhaps, some little pride which induced me to accept the proposal, as I fancied that he would not have objected to my taking this place to-night for the purpose. The undertaking presents no little difficulty. Mr. Ashpitel, even with his extensive professional engagements, had not the opportunities of a Cockerell or a Barry; nor had he found occasion to achieve such a literary position as was held by a Müller or a Bünsen: an eminence of either sort would have rendered my duty more onerous, yet possibly more agreeable to yourselves: yet if the results of Mr. Ashpitel's short, but active, career in the profession appear to be less important than those achieved by such names as I have mentioned, they were nevertheless, numerous and useful: whether derived from his pencil or from his pen, they proved to be highly valuable as tending to promote Architectural Education; to facilitate the knowledge of Classic and Mediæval antiquities, as well as of mathematical and practical science; and to add to the history, theory, and literature of our art. Should my observations fail to enable you satisfactorily to realise the talents of the subject of my memoir, the fault will arise in some degree from myself, rather than from want of the materials on which to dilate. I have to acknowledge the assistance of Miss Ashpitel, the Rev. Francis Ashpitel; Messrs. John Whichcord, James Edmeston, Charles Baily, W. J. Thoms, and Mr. T. H. Porter, his clerk during the last few years; their interesting contributions have tended to enlarge the memoir beyond the usual limits of our papers.

The memoir divides itself into three parts; 1st. His life until 1853, when he left England; 2nd. His Tour on the Continent and its results; 3rd. His subsequent labours.

Arthur Ashpitel was the eldest of six children of William Hurst Ashpitel, of Clapton, an architect and surveyor of some eminence, who had been a pupil and principal assistant to Daniel Asher Alexander, (that clever architect in construction, of whose works we know so little), and had helped him in surveying and laying out the London Docks; he acted similarly for John Rennie, C.E., being concerned very largely in carrying out the Kennet and Avon Canal, and in the (then novel) work of tunnelling, at the city of Bath. For a few years he worked in partnership with the late James Savage, an architect of much repute; and subsequently designed some churches and other works; but quitting general practice at a comparatively early period, he gave his whole attention to improvements upon his property at Clapton, and elsewhere. He died on the 23rd April, 1852, in the seventy-sixth year of his age.

His son Arthur was born on the 14th of December, 1807. In 1816, when scarcely nine years of age, his attention to his lessons in drawing obtained a certificate of merit or "card of thanks," as it was

styled, from his teachers; yet he soon brought his pen to assist his active mind: his eldest sister's earliest remembrance of him was a child amusing himself on the carpet with writing, in an old cipher-ing book of his father's, a romance to be called "The Knight of the Sable Plume." About 1817 while jumping to catch the handle of a door-bell, he fell on the scraper under it, and so seriously injured the sinews or hipjoint of his right leg as to cause him to be laid up for some years; in fact, in 1818 he was able to sit up for a few hours only at a time, on which occasions a tutor (the Rev. J. Buddell) attended him. He walked with crutches for many months; and when stronger, attended during certain hours at Dr. Burnett's celebrated Academy at Hackney. There, when about twelve or thirteen years of age, he was engaged in a play-ground strife of parties divided upon the merits or demerits of Queen Caroline, a subject which then engrossed the attention of the public; and being thrown, his injured limb was again so severely affected as to cause a renewed prostration. During all this illness, his active mind called for congenial food; and while he was confined to bed and sofa, books from his father's well furnished library were supplied to him: there he gathered his ideas on heraldry, chemistry, architecture, and other arts: a few lessons at that time on the violin, formed all the instruction he ever had in music; yet it was then that he grounded himself in the theory of that art by studying Thorough base, which, with some after practice on the pianoforte, enabled him to become proficient in that instrument, though perhaps only his most intimate friends were aware of his performances. Dr. Oliphant, an old friend of the family, and a well-known surgeon of the day, used to sit by his bedside for hours listening to his young patient's doubts, and explaining facts to him. It was at this time (1821) that an uncle gave him a Hebrew Bible which he studied under the tutor who attended him. In 1824 Dr. Burnett was so pleased with an exercise submitted in blank verse, which was an imitation of an epigram of "Tymnæus," that he sent it to the "Weekly Literary Magnet," a publication commenced in that year (No. iv. February 21, p. 61). Those lines, Arthur's first appearance in print, were written when not quite sixteen years of age; and they were the precursors of a large quantity of literary work. As Dr. Burnett had grounded him well, his tenacity of memory, sound sense, and good application, concurred in making him a learned man on many subjects and in many languages. His acquaintance with Hebrew I have already noticed; he translated Greek with facility; was critical in Latin even to composing verses in that tongue; spoke French and Italian as well (or as badly) as most Englishmen who only use those languages on few occasions; and had perused carefully the characteristic English literature of all periods.

Specimens of his early addiction to rhyme still exist in the care of the family; one dated 1828, written on his 21st birthday; "Stanzas," dated 1832; and many more similar effusions show the bent of his mind: one of them "To a young Lady who asked the writer to calculate her Nativity," proves that he had studied Astrology; a subject he often mentioned in our conversations, but I was not aware until lately, that he had formed an unique collection of works on that art, which though absurd in itself, had enough of mathematics in it through its connection with astronomy, to interest his curiosity in its speculations and calculations, but of course he did not believe in them. In 1836, he published anonymously an octavo volume of eighty pages, entitled "The Reign of Humbug: a Satire": this work he described as an attempt to expose the wretched sophistry that pervaded, as it does still pervade, so many affairs public and private, the effeminacy, the inconsistency, the cant, and the rapacity, with which we are unfortunately too well acquainted. About 1841, he published with his name attached to it, a pamphlet in thirty-two pages, entitled "A few facts on the Corn Laws, defending the Agricultural Interest", which appeared in that year in a "Third edition with a postcript." In 1844 appeared anonymously "The year Ninety-eight: being another and a truer Ballad version of the

events of the year of the Great Irish Rebellion"; in which he relates with great truth (to use his own words) the trials of that fearful year of blood and crime, when, the world being all against this land, sedition spread the seeds of strife and death in Ireland, and caused many of her sons to fill dishonored graves. At the end of this work he acknowledges the parentage of the two previous productions.

During these later years while he was regaining strength, he assisted his father in the improvement of the family property; and so laid the foundation of his professional pursuits. I remember that the son once said a friend, wishing to erect a few houses, entrusted them to Ashpitel's direction. It also appears that he superintended the erection of four houses on his own property at Dalston Rise, buying all the materials himself, and paying the weekly wages. Finding his strength sufficient to enable him to give the attention required for such work, he was induced to establish himself as an architect and surveyor in one of his father's houses, No. 5, Crown Court, Old Broad Street, about 1843, when thirty-five years of age: he was joined there by Mr. Edmeston. One of his earliest works, 1844-5, appears to be the Hutchison Markets, the Palace Tavern, with between forty and fifty houses, in Gravel Lane Houndsditch, in the rear of Aldgate Church, for Andrew Kennedy Hutchison, Esq.; these were erected on the site of the house which had been the residence of Count Gondomar while ambassador to the Courts of Elizabeth and James 1st. Mr. Ashpitel endeavoured to keep the old structure standing, but it was too greatly decayed. (The "Illustrated London News", No. 136, 1844, has a view of it; and of the Market, vii. p. 268). The new church of St. Barnabas, at Homerton, was designed 1845, for one of the Church Commissioners, Joshua Watson, Esq., who defrayed nearly the whole expense. This edifice was erected in 1847 at a cost of £4,400., and is in the style of the Middle Pointed Period; and at the time "had the largest finished tower near London"; as the church was to be prepared for gas lighting, a novelty at that period, he had to design all the appropriate fittings. In 1848 he added the parsonage; and in 1852 the north aisle and vestry at a cost of about £1,200. A view of the church from the south-east is given in the "Builder," (vol. v, p. 278), and he subsequently published a coloured view showing the whole buildings. To his use of Kentish ragstone for the walls, is ascribed his introduction to the late Mr. John Whichcord of Maidstone, county surveyor of Kent, another pupil of Daniel Alexander, and so to his son, who had become an Associate of this Institute in 1844, and who gave it in 1846 a carefully written account of "Kentish Ragstone as a building material," which was subsequently printed as a pamphlet containing all that is known on the value and employment of this material, since then so largely used. Mr. Ashpitel was also engaged 1847 upon a new church erected among the ruins of St. Dogmael's Abbey near Cardigan (exhibited 1857); 1849, a memorial to Bishop Ridley, to be erected in Herne Church, Kent, (exhibited 1856); 1851, a new church at Vernham Dean, near Hungerford; schools at Lea Bridge near Clapton, on land presented by his family; large additions to Hackney Workhouse; a house for D. H. (now Alderman and Sheriff) Stone, at Sydenham; others at Shacklewell for C. Allen, Esq.; T. Lee, Esq.; and J. Jones, Esq.; others at Blackheath, for Stephen Smith, Esq.; Pelham Richardson, Esq., and T. H. Fry, Esq.; several model cottages for superior artisans, at Lower Clapton, for a small committee; a new church at Blackheath, on property belonging to the late John Angerstein, Esq., at a cost of about £7,000.; the London Silk Trophy and Ribbon Fountains for the Exhibition of Industry of All Nations, 1851; and 1853, for a Committee managing a public subscription, he designed the Wellington Testimonial placed at the Southwark end of London Bridge; this erection, having been declared an obstruction to the thoroughfare, was sold about the the beginning of 1868, and removed to the grounds of Mr. Dothrae, in the beautiful bay of Swanage, on the coast of Dorset, where the upper part only has been placed upon a plain Purbeck stone base of about 20 feet or more in height: in 1852, he added various works to the amount of £2,500 at the London

Orphan Asylum at Clapton, (the design 1823-5 of Messrs. Goldring and Inman) comprising an increase of dormitories, and a new infirmary. During this period he was largely engaged upon numerous compensation cases arising out of the formation of the North London Railway, and other Metropolitan improvements.

For the Exhibition of the Royal Academy, 1850, he well evinced his great artistic abilities by a drawing comprising "Selections from the Works of Palladio", which he grouped into one composition; all the buildings being drawn to the same scale. He had cause of complaint, he considered, in the position of this drawing on the wall (or rather on the floor I should have said) of the Academy, and in the "Builder" of the same year (p. 273) will be found ten clever Latin lines with a translation in English, which had been "affixed to the frame by some person unknown," but as to the author of them there can be little doubt. For the Exhibition of the following year he made a "Design for rebuilding Blackfriars Bridge, and throwing open the east front of St. Paul's Cathedral" which is worthy of more than a passing word, as it contained the following details; "shops on the bridge to pay interest on the cost; the expense of the new street to be little more than that proposed by the City: the obelisk to be that given by the late Pacha of Egypt to the English Nation: the wharves to be taken from the river, and to have a large sewer beneath them."

Almost simultaneously with his first architectural work he appears to have plunged into literary activity. In 1848 his friend Mr. C. J. Richardson requested his assistance in the first part of his projected publication, "Studies of Ornamental Design", for a description of a remarkable "Ancient Roman Glass Vase", of the same species as the celebrated Portland Vase in the British Museum, and a worthy rival of that gem of antiquity. The text marks his great acquaintance with ancient authors, and is the preliminary essay of important corresponding labours. A few impressions having been printed for private use, he favoured me with a copy. For the second part of that publication in 1852, he wrote a careful description of the elaborate "Gallery Ceiling at Blickling Hall, Norfolk," noting the variety of the emblems as showing the feeling and education of our forefathers. In 1850 and 1851, for John Weale, the publisher, he nearly rewrote Nicholson's work on "Handrails and Staircases: a new and improved method of finding the lines for Handrails; also a Treatise on Staircases"; adding twelve plates of very interesting existing examples of Elizabethan and Jacobean architecture.

Although his name appears as a member of the British Archæological Association in 1845, the year after its formation, he attended the first Congress at Canterbury in 1844, where he made the acquaintance of Mr. C. Baily, F.S.A., and other archæologists. The *Journal* of the Association (vol. i.) announced his intention of giving a paper on the "History and Position of Organs in Churches", and another entitled "Suggestions upon Chancels"; these papers were to be read at the second Annual Congress to be held at Winchester in 1845; but as they were numbered 45 and 46, in a list of 62, they were probably not delivered, and I do not find them mentioned in the record of each day's transactions. In other volumes of the *Journal* will be found the discourses he delivered at several of the ensuing Congresses. In 1848 a lecture "on Worcester Cathedral," (vol. iv) was given extempore to supply the absence of Mr. Edward Cresy, but he had so investigated this subject as to produce on the occasion "a large collection of transcripts from original documents." His critical remarks on Saxon and Norman Architecture are very original and valuable. In 1849 he attended the Congress at Chester, and gave "Remarks on Chester Cathedral," (vol. v.) for which he prepared a very careful plan of that structure to a scale of six feet in an inch; he was also greatly assisted in the preparation of diagrams by Mr. C. Baily. He stated that his path had not been previously smoothened by others, for this Cathedral had not been

illustrated, and all the authorities he had to consult were in manuscript in the British Museum, for the most part very difficult to decipher. That he had gleaned very carefully from them is proved by the context. He was also requested to give an address extempore, on the fine old church of St. John, in the same city, which he concluded with an account of the "Origin and Use of Crypts." In 1850, he prepared "The History and Architecture of Manchester Cathedral," (vol. vi). This appears to be his first written paper of that nature, which much previous labour rendered necessary, by the difficulty of finding early reliable information. From various stray notes and traditions, he was led to visit two or three places near Manchester, at which he considered he identified the old oak framings forming the church, about 1350 at that city, they having been removed when the present cathedral was built about 1440-90. The other parts of the existing building being chiefly of late date, were easily identified. For the Congress of 1851 he undertook for another member, a paper on "The Priory and Church at Repton, in Derbyshire," (vol. vii). He claimed for this monastery that its investigation would lead to the discussion of theories the most important, and as yet uncertain in this branch of Archæology, namely, the settlement of what constituted the difference between Saxon and Norman architecture. At the Congress of 1852 he gave a carefully considered account of "The Architecture of Newstead Abbey," (vol. ix.) formerly the residence of Lord Byron, and then of Colonel Wildman. This was illustrated by a plan : on a subsequent day he gave some particulars of the Cathedral at Lincoln, while the members were proceeding through it. For the meeting at Rochester in 1853, he prepared "The Cathedral," (vol. ix), a paper exhibiting great research into available documents. A discussion arising on Mr. Duesbury's paper on the Castle, it was appropriately terminated by Mr. Ashpitel, with general observations on Norman Fortresses ; and on a following day he explained in a short essay many peculiarities belonging to All Saints Church at Maidstone. "We are indebted" writes Mr. Baily, "to Ashpitel for many discoveries made during his archæological investigations. Among these may be mentioned that at Repton, while superintending the excavations he found the entire foundations of the nave and transepts of the Abbey Church with the bases of the columns perfect and in situ ; these were not previously known to be in existence. At Rochester, he proved that the original eastern end of the Saxon church had been of a square form, and not semicircular as had been supposed." His journey to Italy partly broke the charm which bound him to these annual labours ; on his return in 1854, a difference of opinion among the members of that Association having arisen, many of them resigned their seats on the Council, Mr. Ashpitel amongst the number. Very soon afterwards an Archæological Society was formed for the City of London and County of Middlesex, when Mr. Ashpitel joined his old friends, took a lively interest in the new society, became a member of the Council and Vice-President, and it was not until his health failed that he ceased to attend the meetings. Although I am aware he had promised a paper or two, I think his time and ill-health combined prevented him carrying out the wishes of his friends.

In June of 1850, Mr. Ashpitel entered into partnership with his friend Mr. John Whichcord, and took offices at No. 8, Carlton Chambers, Regent Street, moving to No. 2, Poet's Corner in May 1853, the partnership being determined in 1855, owing to Mr. Ashpitel's declining health. It was on the 25th June, 1850, that being together at Swansea, South Wales, where they were engaged in laying out a large building estate, they descended the Coomdee Coal Mine at Neath, and while waiting in a recess they were shown the way in which the miners warmed their tea over a light; a passing workman gave a shout of alarm, and the guide discovered he was then holding over the flame a can full of gunpowder used for blasting purposes ; the party quickly returned to the surface, thankful for their escape. At Swansea, the partners designed houses upon the St. Helen's Estate ; Fynone, a villa ; the Workhouse ; and the Baths and Washhouses, to which class of erections they had specially turned

their attention in consequence of the passing in Parliament of the "Act to encourage the establishment of Baths and Washhouses," which received the Royal Assent 26th August, 1846. In 1850-51, they designed those for Maidstone (exhibited 1852), which cost £3,600, exclusive of the water-supply. This establishment was subsequently illustrated in a pamphlet printed for private circulation in 1851, entitled "Observations on Baths and Washhouses; an account of their History," with other details; a third edition of it appeared in the following year. The similar establishment in the Bridge Road, Lambeth, was designed 1852-3, for a Company, as the vestry declined to carry out the Act. This building (exhibited 1853), consisted chiefly of two swimming baths—the largest in the world it was then said, and perhaps they still deserve that designation—the first-class one having a water surface of 115 feet by 40 feet, and the second-class one about 100 feet by 45 feet; there were also fifty-five private baths; besides vapour and shower baths; with thirty-six washing compartments. This building is also noticeable for the ingenious adaptation of lattice construction to the roof of a wide span, similar in conception to the lattice bridges of America; it has also centre trusses supporting purlins of lattice construction; these prevent the chance of lateral settlements in the roof, and by enabling the principals to be placed at larger intervals, contribute to its economy. An infant school was designed in connexion with the washhouse, where children might be left in safety and with advantage to themselves, while their mothers were engaged close at hand in the domestic duties. A plan and interior view of this building, is given in the "Builder", (vol. xi. p. 628). Other similar establishments were designed by them, and in part executed under their superintendence;—1851, at Southampton; for the parish of St. Clement's Danes, Strand; at Kidderminster; at Gloucester; 1852, at Dudley, Worcestershire; for the parish of Clerkenwell; at Bilston, near Birmingham; at Tonbridge, Kent; at Hastings, Sussex; 1853, for the parish of Islington; at Leek, Staffordshire; at Tynemouth, Northumberland; at Salford, Lancashire; and another in France. In connection with this subject, they designed, 1851-2, the Water Supply at Kidderminster, and at Bilston; and took out a patent for an improved valve to fill, and to empty, the baths, an invention which proved very satisfactory.

The general practice of the partners, besides numerous cases of references and arbitrations, comprised the following works—1851, the Kent Ophthalmic Hospital, and the Kent Infirmary, both at Maidstone; the Kent Asylum Chapel, at Barming; a new Church at Postling, Kent; the restoration of Plaxtole Church, Kent; the Tower and Spire of Wednesbury Church, Staffordshire; the restoration of Iken Church, Suffolk; and that of the Duke Street Chapel, St. James', Piccadilly: the Parsonages at Maidstone, and at Lamberhurst, Kent: the Cemetery at Bridgewater, Somersetshire: Schools at Boxley; 1851, at Ipswich; at Birling, Kent; at Whialey; at Milton, Kent; at Shoreditch; at Rainham, Kent; at Pontardawe, Glamorganshire; and for Lord Abergavenny, at Birling Manor, Kent: the enlargement of the Town Hall at Maidstone; and the erection of the new one at Burslem: a Clock tower for Lord Abergavenny, at Birling: the Bridges at Godmersham, and at Teston; and the widening of that at Yalding, all in Kent: the Workhouse at Hull: Shops at Maidstone, for Messrs. Paine and Co., combining iron framing with tile filling in, a novelty of construction at that time; this was exhibited at the Architectural Exhibition; besides several others in London: Houses at Maidstone, for F. Scudamore, Esq.; Cob Tree House at Aylesford for T. Franklin, Esq.; two villas at West Hill at Wandsworth; a villa at Wanstead for W. Attwood, Esq.; a residence in Ladbroke Square, Notting Hill, for W. Bartlett, Esq.; a villa at Wandsworth, and another at Wimbledon, both for Dr. Finch: a residence for Lady Waldegrave: several Houses at Wimbledon on the Cottenham Park Estate: an Observatory near Swansea, for L. Dillwyn, Esq.; and a block of Dwellings for Artizans, in Lambeth, for a company formed for that purpose, in which the late Archbishop of Canterbury took a very leading part.

All these designs, with others by both the artists, were collected and formed in a picturesque manner into a large drawing, exhibited 1855, as "Works in hand or recently completed," which was the last one submitted as their joint production: but another publication was issued by them also in that year, entitled "Town Dwellings"; advocating the erection of fire-proof houses in flats; a modification of the Scottish and Continental systems, adapted to the smallest, or to moderate, means. This pamphlet contains statements of much value on the subject, with suggestions of the means to be adopted for improving the habitations of the lower classes in crowded cities; and statistics of the expenditure and income of lodging houses. One of the plans given exhibits blocks surrounding a square, of the form in which the Peabody dwellings are now being erected, but the arrangement advocated for the blocks has, I venture to submit, a defect in building up the angles of the square instead of leaving the block free at those parts, for effectual ventilation.

I have already noticed that the death of Mr. Ashpitel's father occurred in the early part of the year 1852: he then arranged the private matters devolving upon him as the head of the family, in a manner that, from what I have been recently informed (it was a subject to which he himself never adverted in any way) cannot but be deemed most generous and disinterested. Taking advantage of the slight increase of income which he reserved for himself, he prepared for a journey on the Continent, but more especially in Italy, a country long familiar to him as a student of Classic literature and art, and a land which we can imagine he had been most desirous of visiting to investigate its antiquities for himself. He left the English shores about 6th of October 1853, travelling through Paris and Marseilles, along the Mediterranean, and spending the first three months of the new year at Rome; for the next three months he was at Naples; being at Leghorn in the end of May; at Florence and Venice in July; at Milan early in August; that city he quitted after a few days' illness caused by an attack of the "Malaria" fever; perhaps he considered himself secure from a return of it, or did not know the evil effects of retaining even a symptom of it about him; but unhappily he was laid up with it for three or four weeks at the little village of Airolo in Piedmont. His recovery, he often stated, was assisted by the kind care of an English lady staying in the neighbourhood. Even there, while obtaining renewed strength, he sought for fresh food for the mind, and after many useless inquiries for "a Galignani of any number of weeks old," he heard of a library of the works of ecclesiastical authors which had been gathered many years previously by a clerical resident. The whole collection was at Mr. Ashpitel's service after a short interview with the curator, who was very thankful for some one to use what, in that locality, was considered to be mere lumber, and for the necessity of wiping off the dust of years from their bindings before sending them to the invalid. From Airolo, he journeyed homewards quietly through Paris, arriving in England again on the 24th of October, 1854, having been absent just twelve months.

For a Classic Scholar to be in Rome, and not to visit the Commendatore Canina, was next to an impossibility. Our friend found him in his studio—an interesting series of questions and mutual relations of views arose—resulting in their visiting each spot of interest, where with the Italian views urged on the one hand, he was interested in the remarks of the equally enthusiastic German antiquary Dr. Emil Braun, on the other side; the retentive memory of Mr. Ashpitel enabling him to refer to the words of the ancient historians and writers for necessary elucidations; he assisted their researches and came away, loaded with the latest information upon the various important discoveries in the excavations, and with various drawings, and levels of the sites of the Forum and of other antique buildings, prepared specially to enable him to carry out an object expressed to him by Canina. The pleasure and interest of this sojourn in Italy was greatly enhanced by the companionship of the late

David Roberts, R.A.; it was at the suggestion of that renowned painter of architectural subjects, that Mr. Ashpitel made most careful sketches of the site of the Forum in its then state, from the top of the Palatine Hill.

No result of this Continental trip was made public for some time; but Mr. Ashpitel was deeply thoughtful of his future work. In 1856 Canina arrived in England, on the special invitation of the late Duke of Northumberland, who had requested him to visit Alnwick Castle in order to put into operation certain works for the internal decorations that he had designed for his Grace's residence. This scheme, and the melancholy end of its author, who died at Florence on October 17th, while returning to Rome, were the subjects of Discourses in these rooms by Anthony Salvin and by Professor Donaldson in the month following; and therefore need no further reference. Although Canina professedly took up his residence at the hospitable quarters in the house of Professor Donaldson, then, as now, our Honorary Secretary for Foreign Correspondence, he spent a large portion of his time with Mr. Ashpitel at Poets' Corner, using the studio and the library, together with the Bachelor's unpretentious hospitality, occasionally enlivened with practice on the piano. It was, without doubt, during this period that Mr. Ashpitel worked out with the great antiquary the solution of those discoveries made during late years in the Forum, which greatly upset the theories usually received. Before noticing these labours, I must premise in due order that in January of 1857 (the following year) he contributed a paper to the Society of Antiquaries (in which Institution he had been elected a member in 1847), entitled "On Choirs and Chancels, particularly as to their use in the South of Europe." In this paper he sought to combat "a notion which has been lately promulgated, that the laity should not be allowed to enter the chancel," while on the other hand, "in our cathedrals, the people are all huddled into the chancel." Whilst in Italy, he endeavoured to observe the usages and practices, and to collect the traditions with regard to choirs and chancels. The result of his researches may perhaps be briefly stated from his concluding paragraph, that as the Church of England has but one altar (or table) in every church, and as that altar is moveable, so the small congregations, as in a cathedral, could be accommodated in the choirs, and the larger attendances in the naves. On the 18th of June in the same year, he read another Essay "On the City of Cumæ and the recent excavations there." It details the particulars of a very large Greek tomb which had just been opened, and into which Ashpitel at once descended; the guide rushed to his friend and stated the fact very hurriedly, making the friend believe that Ashpitel had fallen in; he ran to the opening in the roof, and was relieved when he perceived the architect busily engaged with rule, pencil, and paper, jotting down the size and peculiarities of this valuable example. His notes, thus hastily made, eventually proved to be important, for shortly after his return home, application was made from Naples for copies of the memoranda he had made, the ground having been hastily filled in again, a request with which he instantly and gladly complied. Both these papers are printed in the "Archæologia" (vol. xxxvii), published by the Society.

It was in March and April of the same year (1857) that our esteemed late colleague read his first paper at this Institute. It was entitled, "On the different theories respecting the Forum at Rome, particularly those of our late member, the Commendatore Canina." He opened the subject by stating that to him the subject had a peculiar interest, not only from its intrinsic value and importance, but because it was the favourite study of his friend, the celebrated Luigi Canina, with whom, and with another valued friend, Doctor Emil Braun, he had walked again and again over every part of the site, and paused over every stone, while he listened to their discourse and discussed every theory with them. Canina himself, just before his departure from England, urgently requested Mr. Ashpitel to take some opportunity of making Canina's views more generally known to English architects; to justify him, as far as he conscientiously could, from the attacks of adversaries; and particularly to enlist the sympathies

and support of his professional brethren in his favour. Mr. Ashpitel regarded his friend's last expressions to him as a sort of legacy, and endeavoured to lay before the meeting the most promising points of interest in the investigation. The minuteness of research into the writings of the ancient authors quoted by Mr. Ashpitel, and the careful interpretation of the (often very obscure) meanings,w hich required most considerate elucidation, took by surprise all those who were not well acquainted with the learning and research of the exponent of Canina's views. It is recorded in our "Transactions" that Mr. Donaldson stated he differed very materially in many points from the opinions of the authorities mentioned in the paper; and, that Mr. Ashpitel vindicated his positions. I fear although only a dozen years have elapsed, there are few present to-night who heard that lecture: our President, Earl de Grey, who was in the chair on the second occasion, with very many more have passed away; and others are feeling the weight of that additional number of years, leaving the welfare of the Institute to the Juniors of their day.

It was in the next year (1858) that appeared the climax of his researches, with the theories of Canina, in the production of the very interesting picture exhibited at the Royal Academy, entitled "Ancient Rome," a view from the Terrace of the Palace of the Cæsars on the summit of the Palatine Mount, of the Capitol, Tarpeian Rock, Forum, &c., carefully made from study of the existing remains, and looking along the Forum as he imagined it should be restored. The drawing was as attractive from its artistic talent as from the effects of his archæological research; and for the use of his friends he wrote a small pamphlet, forming a key to it (See *Illustration*). This production was paralleled in the next year's exhibition (1859) by a companion view of "Modern Rome" from the same eminence, but looking a little more across the Forum (See *Illustration*). His composition was obtained by putting together the careful sketches made on the spot, as before mentioned. Both drawings attracted much attention at the time; and he was so often solicited to publish them, that in the year 1866, after having been somewhat reduced in scale, they were carefully chromo-lithographed by Messrs. Kell, and were issued by Messrs. Graves of Pall Mall, together with a "Description and Key," contained in a pamphlet pointing out the various celebrated objects in both views, and shewing the authorities for the various restorations. In connexion with his researches in Italy, he read a second paper at the Institute in June 1860, "On the Origin and Development of the Use of Crypts in Christian Churches from the earliest periods." The preparation of this essay was no light task; he had to consult the ancient Greek and Roman writers that touched upon the subject, to compare his notes with the opinions of modern authors, and to combine them with the results of his own inspection of the catacombs at Rome and elsewhere. What he gave us then, was only the first half of the history of the subject; he had often promised the remainder, having studied the matter in his archæological tours, and as he had received curious particulars as to mediæval crypts of which he desired to avail himself. This is now left for some one else to carry out. His observations during a discussion in 1861 at these rooms, on "The Mode in which Light was introduced into the Greek Temples," as propounded by Mr. James Fergusson, form almost another paper, and may be characterised as equal to the previous one in value, from the erudition which he displayed, and from the care with which he quoted his authorities.

In June of 1862 he contributed his last paper to us "On the Italian Architectural Drawings in the Royal Library at Windsor," on which occasion several volumes of those original drawings were exhibited here in accordance with the expressed wish of the Prince Consort, then lately deceased, and under the care of the Royal Librarian, B. B. Woodward, Esq., F.S.A., who had obtained Mr. Ashpitel's assistance to decipher the Italian characters and phrases of the sixteenth century on these drawings; a task which was rendered easy to him by many long days reading in the libraries of Italy for the purposes of his studies. Mr. Ashpitel wrote out the notes which he made during his examination of the volumes; and

a copy of his manuscript, entitled "Summary Notices of the Architectural Manuscripts in the Royal Library, Windsor Castle," was made an exception to the rule in regard of gifts, and was graciously accepted by the Prince Consort, who is said to have discovered at the Castle, during some important alterations, this mass of valuable original measurements, restorations, and designs. In that collection was a very old and curious plan of an edifice which had covered a space equal to three times the area of Westminster Hall, and had been half as high again as that structure. It proved to be a record of the Basilica of Constantine and Maxentius (formerly known to archæologists and architects as the Temple of Peace) at Rome, which plan purported to have been made for the Cardinal Albani at the time of the dismantlement of that building. Mr. Ashpitel was so much impressed with its value, that he carefully studied it for his drawings in restoration of the existing remains, and produced exterior and interior views, which were exhibited respectively in 1864 and 1865 at the Royal Academy. These drawings were, I think, the last of the sort that he prepared.

Among his minor writings may be noticed 1856-57, the revision for Mr. John Weale, of another of Peter Nicholson's books, entitled, "The Carpenter's New Guide; or the Book of Lines for Carpenters, geometrically explained." The first division comprised the original work on "Practical Geometry and Carpentry"; the second, "On Practical Mathematics, Mensuration, &c." by the Editor; and the third division, "Practical Rules on Drawing, Shading, Perspective, &c." by George Pyne—the whole including 74 plates. In the April and June numbers of the "Gentleman's Magazine," 1858, he contributed a review of Dr. Birch's valuable work on the "History of Ancient Pottery." The notice, like his later ones on new publications, are not mere transcripts of the interesting portions with a few subjoined epithets of praise, but an elaborate examination of the subject, directing attention to the several essential portions, detailing his author's exertions in forming a standard work, and in fact making a condensed essay. It was about 1858 and 1859 that Messrs. Black, the proprietors of the "Encyclopædia Britannica," engaged him to conclude such of the biographical articles as had been entrusted, for the new edition of that publication, to Lord Macaulay, whose death had prevented the continuance of that nobleman's assistance. Mr. Ashpitel consequently wrote the notices (amongst others) of Vanbrugh, Wren, the Wyatt family, William of Wayn-flete, and William of Wykeham. He visited Oxford to inspect the valuable collection of drawings by Wren; and in the last memoir he adhered to the traditional view of his subject; though he afterwards felt the force of, and advocated, the opinions contained in my paper on "Masons and Supervisors," read at this Institute shortly afterwards, opposed to the popular idea of Wykeham's having been an architect of anything besides his own fortune.

After the dissolution of partnership with Mr. Whichcord, he continued to reside at No. 2, Poets' Corner; and although he then retired very much from the active exercise of the profession, he carried out a few small edifices entrusted to him, and frequently acted as arbitrator in disputed matters. For the Rev. James Reynolds, a former schoolfellow, he in 1854 erected the residence to, and repaired, the Chapel formerly the Hospital for Lepers at Great Ilford, Essex, adding a Porch; and wrote a history of the building in 1858. In 1861 he ventured to Gothicise the façade of a Public House in Red Cross Street, City, probably the first attempt to render the mediæval style appropriate for such a business. It was executed in Bath stone after the Venetian Gothic fashion, at a cost of £250., with some good carved heads in bold relief: the upper part of the design, as too often the case, was not carried out. In 1861 he rebuilt Ripple Church, Kent, on the original Norman foundations, at a cost of about £1,600.; it consists of a nave and chancel with much carving, a tower with a spire, the latter covered with zinc, which has assumed the colour of old lead. In the Church he put up a rich monument to the memory of — Sladen, Esq., the lord of the Manor. He also restored Sutton Church, about a mile

from Ripple; it is one of the oldest churches in England; the circular apse with an arcade having about fourteen columns with moulded arches and carved caps; a double Bell cot was put up at the same time; the whole works costing about £400; it consists of a nave, chancel and porch in the Norman style, with seats for about 230 persons. In 1862 he built the Church at Aldborough Hatch, Essex, consisting of a nave, chancel and small tower and open timber porch, in the style of the Decorated Period, at a cost of about £2000. with seats for about 340 persons. In 1863 he made the drawings for a church to be erected at Oamaru in New Zealand, with sittings for about 350 persons; to be built entirely of timber; and was designed for a Merchant who became unable to carry out the gift; it consisted of a nave, tower, chancel and spire, all to be covered with shingles; the general idea he adopted from an old chapel near Pershore in Worcestershire. In 1864 he erected schools to accommodate seven hundred of the children of the District of Holy Trinity at Hoxton, at a cost of about £3000. In 1865 he rebuilt the Tower and Spire of Great Ilford Church, Essex, to contain eight bells; this spire is another of those which he covered with zinc; and the construction cost about £600. For the Hon. and Rev. H. W. Bertie, the incumbent, he in 1867 amended and enlarged this plain brick church (erected about 1825) inserting new stone traceried windows, all of different design, adding one bay at the East end with a half octagon apse to form a new chancel; the whole costing about £2000; the style adopted for both the Tower and the other new works was Venetian Gothic. A new Parsonage was built at the same time, in the same style, of brick with Corsham Down Bath stone; the house is large, having a frontage of 70 feet, and with the Stabling, Brewhouse, and a small Farm, cost altogether about £3,500. Among his other numerous designs, was one made about 1860 for the restoration of the church of S. Margaret, Westminster, for the parochial authorities, which had been in contemplation for some few years previously. In memory of the late Peter Borthwick, M.P., he designed for the family, an altar-tomb based on the memorials of the early Christians found in the Catacombs at Rome; it was erected in the West Brompton Cemetery, and cost £100. being executed in Portland stone, granite pilasters, and with four bronze statues in niches; it was illustrated in the "Builder" of 1867 (vol. xxv, p. 11). He designed the ornament cast on the Westminster Bell, so familiarly known as "Big Ben," which he undertook only after having obtained the sanction of Sir Charles Barry, R.A.: and he assisted Mr. E. M. Barry, A.R.A., in collecting the documents for a reproduction of what is called "Charing Cross," erected in the courtyard of the Railway Terminus in the Strand. His last work was a design for twelve almshouses at Clewer, near Windsor, to be built at the sole cost of one of his sisters; the foundation stone has been laid since his death, and the works are now proceeding under the direction of his friend Mr. Whichcord.

His later literary productions were two 'Reviews' for the "Fine Art Quarterly Review," edited by Mr. B. B. Woodward, the Librarian at Windsor Castle; one in 1866 of "The Principal Ruins of Asia Minor," published by C. Texier and R. P. Pullan; and in 1867, the first portion of a review on "Gothic Architecture in Spain," by G. E. Street, A.R.A. During the years 1865 and 1866 he was engaged for Messrs. Black upon a "Treatise on Architecture," which appeared early in 1867. This was not a completely original work, as it comprised several of the Essays published in the "Encyclopædia Britannica," being those on Architecture, Building, Construction, Joinery, Stonemasonry, Carpentry, Roofs, Arches, and Strength of Materials, originally written by Prof. W. Hosking, Mr. T. Tredgold, Dr. T. Young, and Prof. J. Robison. These form the staple of the work: Mr. Ashpitel, acting as Editor, revised those treatises to the limited extent allowed him; and supplemented them with entirely new sections on Egyptian, Jewish, and Assyrian Architecture; a chapter on Indian and Chinese Architecture; and a Glossary of Terms used in Mediæval Architecture; besides adding the article Acoustics, and supplementing those on Joinery, Roofs, Stonemasonry, &c., to bring their information down to the present

time: he also supplied the material for numerous additional plates of Illustrations to the Glossary, as well as to the Arabic, the Romanesque, the Pointed, and the Modern French, styles. A writer must have undergone a similar infliction of carrying out a new edition under the restrictions that publishers will put upon it, before he can fully appreciate the trammels that attend the labour of rectifying some of the mistakes and incomplete views of writers of previous days, when correct information on such subjects as the History and Theory of our Art were less obtainable than at present; for generally the trade is too fond of reissuing its old stereotype, alongside of the revised, matter. The last production of Ashpitel's pen was a contribution towards the history of the Great Bell of Moscow, now preparing by his old friend Mr. T. R. D. Tyssen, F.S.A.

I have already noticed the papers read by him at this Institute, and had almost been tempted to record each occasion when, in important discussions, he gave us the results of his learning or experience. These were not the only exhibitions of the interest he took in its welfare. What was he not ready to undertake either for this Society, or for its members individually? Elected in 1851, he served on the Council in 1856-58, and as Vice President 1862-64, and again on the Council in 1865-67, besides acting on Committees as often as the several Councils, or the members at any of the meetings, considered his services as essential: and until his strength failed him, he was constant in his attendance, for his name on a committee was not for sham services. During several years from 1855, when the Metropolitan Building Act first gave the labour to this Institute, he usually presided at the Board of Examiners of Candidates for certificates of competency to act as District Surveyors; and took great part in the preparation of the questions to be put to the candidates at each meeting. From what I have heard, I am sure that the candidates who may have failed to pass the first time of examination, will testify to the delicate manner in which he took unsatisfactory answers, striving to be sure that the points were missed by want of knowledge, and not upon "catch questions," or not arising from the unusual position in which they were then placed; probably an easier one, after all, to others entailed upon them while carrying out the arduous duties for which they were then seeking to be considered competent.

When, nearly ten years since (1860), the Architectural Association a second time asked this Society to institute a Voluntary Architectural Examination, a scheme was propounded by the Council after much consideration, in a form not acceptable to the members of the Institute, and a Committee was appointed to investigate the subject. The services of Mr. Ashpitel as chairman of that Committee were not confined to the duties of attendance at its numerous meetings, for his personal acquaintance with gentlemen officially connected with other public examinations procured to the Committee the results of their experience; and when, out of the rather discordant schemes which are understood to have been proposed, one was issued that secured the adhesion of all the advocates of such an examination, its appearance was due in great part to his example of that forbearing compromise of unessential points which is so necessary in the conduct of public business. His influence with those members whose dislike to a "Diploma" rendered possible the rejection of any scheme of examination, as well as with those who thought that an examination would not be acceptable without the "Diploma," offered an opportunity for his reconciliatory powers, which was happily used; and the ultimate acceptance of the Committee's plan may be fairly ascribed in great part to his subsequent energetic advocacy of it. After that plan for a Voluntary Examination had been adopted, he compiled the "Sketch of Form of Examination Paper," which was printed with attached Remarks. These exertions cleared the way for his colleagues, Messrs. G. G. Scott, R.A., and M. D. (now Sir Digby) Wyatt, in the labours of the first examination in 1863. The Report by these first Examiners; as well as that by the second Examiners in 1864, comprising himself with Messrs. Scott and T. H. Lewis; and again in the third Examination, by himself with

Messrs. E. Nash and J. W. Papworth in 1866; together with the revision of the regulations, proved that the rising generation could find none of its seniors more liberal, more helpful, or more earnestly practical, than Arthur Ashpitel. In the Examination Papers, which are mainly due to him, "he showed a true practical feeling, for when he talked over the matter with me," writes his brother, "I observed that he seemed chiefly solicitous, first, to set the more intellectual subjects in their due place, so that Latin should not be altogether pushed aside; and next, to give every question a real bearing on the main object of the Examination, making even pure arithmetic questions connected, in form at least, with professional life, and most carefully excluding all those showy and impossible questions with which some examiners delight uselessly to adorn their pages." No one more than himself regretted the apparent indifference in the succeeding years, shown by the younger members to the offer of subsequent examinations, an indifference which he was willing and eager to attribute to the requirements of office work not affording sufficient time to prepare for the task, rather than to any coldness to the advantages of a scheme originally urged so strongly by the members of the Architectural Association. He subsequently advocated the preparation of a course of Lectures on subjects in connection with the Examination, and the evening on which he devoted himself to the explanation of "Mason's work and Masonry" to the Voluntary Examination Class of the Architectural Association, will perhaps be in the memory of some few who are now present. In another matter of a somewhat similar character, namely a "School for Artistic Architectural Education," propounded by Mr. George Gilbert Scott in the rooms of the Architectural Association, the Council requested Mr. Ashpitel to act with others on behalf of the Institute. A scheme arranged with them by the various representatives of other Societies was laid before the Institute, and, with some few modifications, was recommended by it for adoption. But it is supposed that the many urgent calls upon the time of the originator of the scheme, Mr. Scott, has prevented him from taking the necessary steps for putting into execution the plan, which received the name of "The School of Art Accessorial to Architecture."

When in 1850 the Architectural Exhibition, founded by the Architectural Association, had taken a fair hold on public attention, and it was the desire of its friends to extend the field of its operations by the renting of better galleries, with the other necessary expenditures, Mr. Edmeston undertook the duties of Honorary Secretary, while Mr. Ashpitel provided the funds as Treasurer for many years, and both were greatly instrumental in saving that Society from a premature death: the result to Mr. Ashpitel's pocket was for many years a chronic deficit on the part of the enterprise. After the Exhibition had been established a short time in the Galleries in this establishment (which had been formed by the aid of the Architectural Union Company, in the foundation of which he took the same interest as in the other professional Societies I have named) he, as Treasurer, announced at one of the opening meetings that all the debts had been paid, and amused the audience by the declaration of the novelty of his position at having a small balance in favour of the Society at the bankers, and being in debt instead of money being due to him. To the Architectural Association, to the Architectural Museum, and to the Architectural Benevolent Society, his purse and time were fully opened, to the latter more especially, on whose funds there is inevitably a constant call from unfortunate members of our profession and their families throughout Great Britain and Ireland, that ought to ensure its being more warmly aided by successful architects than is the case even after its now twenty years of useful exertion. His private acts of liberality are of course beyond the objects of this Memoir. He also accepted the unenviable position of Treasurer, to a Committee for the production of a work of manufacture to be executed by 150 ladies for display at the Industrial Exhibition of 1851, assisting greatly in the design made by my brother, J. W. Papworth; and in the execution of the patterns to the full size by W. B. Simpson, of West Strand. This carpet was accepted, and eventually exhibited, by Her Majesty. His valuable assistance on that

occasion will be gratefully remembered by me as Honorary Secretary, and I am sure by all who were engaged upon its production.

Whilst on the subject of Societies, there is one other for which I can also speak, and personally speak, on the unlimited aid which he gave to it. Mr. Ashpitel joined the Architectural Publication Society upon its being first brought before the profession by myself in 1848, and it seems but as yesterday, that while waiting in the Library of the Institute in Grosvenor Street for the members of the Committee, I found a gentleman amusing himself in the meeting-room. As Honorary Secretary I addressed him; this was my first introduction to one from whom, from first to last, not an unkind word or action was ever received, even on occasions when it might be supposed that some irritation had been given to the susceptibilities of an author. In 1853 he contributed the "History of Ancient Baths and their development in the Modern Baths and Wash-houses," with various illustrations; he warmly supported the commencement, by the Society, of the "Dictionary of Architecture" in its integrity, no one being more aware than himself of the want to our profession of a work combining modern discoveries and facts, with references to authorities for obtaining fuller information on each article. At first he only occasionally assisted, but soon after his return from Italy, he (in 1855) wrote the article "Manufacture of Brick"; and from that time to within six weeks of his death that work received his zealous assistance as a contributor, and his earnest co-operation as a revisor: this last duty, like all duties undertaken by him, was no sinecure; a proof of each sheet is sent round to a certain number of members; and according to the subjects of the articles therein, I was certain of receiving from him one, two, or three pages of foolscap of criticism and suggestions, sometimes concluding with a poetical "Morial" on the consequences of passing over the carelessness of certain writers, the worthlessness of certain extracts, or the falsity of tradition or of dates. A few of these amusing lines found their way into the columns of the journals, and will perhaps be remembered. Mere sickness did not prevent his attention to these sheets, for he evinced his pleasure in the progress of the work by sending his remarks written in pencil whenever, unable from weakness to leave his bed, he could not write in ink; and when on the sofa, or indeed at any time that a visit for discussion on points that seemed to require particular consideration was demanded, he was always ready to give up the necessary time to the conversation, which generally ended in discussing things done at the Institute and elsewhere, until the arrival of the small hours were too quickly announced by the Westminster bell. This was not the case with the last article he promised to write; it had been commenced; all the information was noted for it; but after two applications for "the latest time" for sending it, I had to call upon him to ask for it; his state of weakness allowed him to give only the time necessary to explain how he had intended to write it, and to beg for another week: but it had to be written by another hand. This was my last interview, and my last visit but one to Poets' Corner. Such intellectual evenings as we had together are neither easily forgotten nor replaced.

The effects of the fever and ague which he experienced at Airolo, were felt by him severely for several years, and once attacked him for some days when attending the Exhibition of 1854 at Manchester. With his mind always actively at work either in pursuing his professional or his literary labours, or responding to the numerous applications for advice or help, he did not pay that attention to his delicate constitution which one less considerate to friendly appeals would have done: in fact he overtasked his body, which was always ready to yield, from his early affliction, to changes of temperature. Even on the morning of the day I last saw him, whilst in so weak a state as hardly to be able to hold the papers in his hands, he had driven to Bayswater to correct a statement in a draft which he considered of importance to a client: most persons in his condition would have trusted to a letter. In late years he had occasionally resided for some weeks at Ramsgate for the advantages of sea air and of boating, from which he had always received benefit; and early in last year he took up his residence,

first at Reigate and then at Ramsgate, whence he was brought home in the autumn in the very weak state from which he never rallied. I think myself he held the opinion that he would not recover, for on the occasion of my last visit to him he handed to me a rare volume on Heraldry which my brother had lent him five or six years since, and which had been kept by him for the purpose of their considering together some passages long known as a puzzle to students in that science; up to that time he had always strenuously turned a deaf ear to any notion of returning it before the solution had been effected. A few weeks of lingering weakness ensued; and then his life ended in a quiet and peaceful sleep in the afternoon of the 18th of January last, in the 61st year of his age. On the 25th he was buried in the family vault in Hackney Church Yard, by his nearest relatives and some of his friends, and literary, or professional, colleagues.

Having thus chronicled the exertions of a true "working man," a few moments may be allowed me to record his abilities and personal character.

His architectural talents were exhibited in the numerous works I have named, of a class such as usually falls to the lot of an architect in general practice, especially of one who does not enter into open competitions. He selected the Mediæval, or the Italian, style as appeared to him best suited to the subject in hand, and treated each with careful consideration. His ecclesiastical works were a credit to the steady development of Gothic architecture, and even met with general approval from the more severe class of critical writers. His designs were never pretentious; in rebuilding old churches he adopted the type of the former edifices, and conformed to their general arrangements as much as possible. Although his sympathies were decidedly with the Classic Greek, and Roman, and the noble Italianised Roman, styles, he felt that for such edifices as he had to design they were inapplicable. It will be remembered, no doubt, how on many occasions some years since, when the profession was more divided on the questions of Classicism and Gothicism than now, and it was urged on one hand, both by word of mouth and by writings, that an architect ought to practice only in one style, for only one style could he appreciate; Mr. Ashpitel's reply was expressed in the terms, "If I relish turtle, is that any reason I may not eat venison"? His liberal views on this point appeared to him to have gained much ground of late years.

I must not omit to record his minute and accurate knowledge of levelling, chaining, and mapping, land, and his facility in working the theodolite; his readiness in these matters was very remarkable, considering that an architect educated in London is not often supposed to acquire them, and the fact of his lameness might have excused him. He has often been out with Mr. Whichcord when surveying for railways years ago, and worked away at the instruments for days together for mere amusement. The elegance of each step of his mathematical investigations was remarkable. His creative faculties were less directed in the Fine, than in the Industrial, Arts: although he had as keen an appreciation of the beauties of nature as he had a quick sense of the ludicrous and sarcastic, yet painting and sculpture were not such familiar subjects in his talk as the rites of a printer's chapel, the mysteries of a shipbuilder's loft, the management of an estate, or the manœuvres of a builder's workshop. The bent of his inventive faculty seemed to be a rapid application of his familiarity with technical details; he made as little difficulty of entering into the confusing details of the balance sheet of a public company; as of explaining and exhibiting the use of a box of carpenter's tools to a lad to whom he had made a present of it. In his numerous important Rating, Compensation, Arbitration, and Professional cases, and when acting on Committees, this familiarity with dry details made very apparent its help to an understanding of the matter under investigation; assisted as it was by his clear insight into a case, his strict impartiality, and his unmoved temper. His knowledge of theoretical and

practical construction was highly prized; it was useless for a builder or workman to try to dispute a point with him, for he was as ready to explain what he meant, as to show practically how the work should be done if there was any appearance of not understanding what he meant. It was a source of great regret with him that the tenor of the education in and out of offices, was now more for artistic, than for practical, qualifications. No one knew better than himself the value of the former; but he always maintained that in the present day it was placed in too exalted a position by many of his confrères, and tended, by the lack of information it too generally entailed on the student, to place the designer in an inferior position to the constructor or builder in the mind of the public. His brother writes to me, "Mr. Ashpitel was essentially practical, although he greatly disliked the modern use of that word as it is employed to prefer mere mechanical expertness above theoretical science, whereas perfect practice, he maintained, must be based upon true theory. With this opinion, I think, we may connect his great interest in the Voluntary Examinations."

He spoke with precision, and generally with fluency, in public. "Mr. Ashpitel," wrote the editor of a Journal in 1849, "is one of the few architects to whom a Latin charter is no obstacle in an enquiry; and he speaks fluently and well." The strong memory which he retained through life gave him a remarkable facility of quotation in illustration of any subject of conversation, and he was always ready for any discussion: whether it was to suit the intellect of the boatmen when out for a sail at Ramsgate; or that of the agricultural labourer when receiving a prize from his hands at a Local Exhibition; or the encouragement of a junior member of the profession; or the exigencies of eminent members of our Art; it was always the same clear mind that expressed itself in language suitable not only to the occasion, but to the individual whom he had to address. Professors of the various Sciences found in him a conversible companion, who understood their terms and phrases, and could give valuable assistance in an adjudication upon a theory, an experiment, or an operation.

Nothing perhaps could illustrate more clearly the variety and extent of Mr. Ashpitel's scholarship, than the numerous articles on every variety of subject, which he contributed to that very useful journal "Notes and Queries." These comprised Classical illustrations and allusions; popular manners, customs, and superstitions; English and Italian art; archæology; Early English literature; discoveries, &c.; and indeed on every point of literary interest, the well-known "A. A. of Poets' Corner," was ready to put forth some curious note, suggestive query, or instructive reply. These contributions, supplied almost weekly for so many years, even whilst laid up at Ramsgate, would form of themselves, a very interesting volume.

Mr. Ashpitel has himself so well expressed what is expected of an Archæologist, that I may be pardoned for quoting a somewhat long paragraph. "The pleasure of antiquarian research, particularly into those matters which relate to architecture, is ever attended—as are most of the things which delight us—by some care. The fear that, after the most lengthened inspection, the most accurate comparison, the most careful measurements, the most laborious research among books and manuscripts, some little circumstance may have been overlooked, some short passage unnoticed, or some unusual character misread, gives anxiety and care to what otherwise is, to an educated mind, the most delightful as well as useful and instructive of human pursuits. It is for this reason we so frequently complain of the short period that has been allotted to our labours, and we wish we had more time to bestow upon them; not from habits of procrastination or irresolution, not by the way of excuse for the little we have collected, nor to form a graceful exordium to our address, but simply because we dread there is yet something behind we have not seen—some valuable fruit we have not plucked." To these appropriate remarks he subsequently added;—"Two great errors among architectural critics have been these: they have formed two distinct sections—the draughtsman and the black-letter man; the two qualities are

very seldom united in one person. The consequence has been, each party has brought preconceived notions to the field; and while one has laughed at the charter or chronicle as contradicting his views, the other has extended its evidence, and made it invade territories it never was entitled to possess." Mr. Ashpitel had a great repugnance to take anything on second hand authority. As one result, out of many, showing what may be obtained by a timely reference, he in his paper on Rochester Cathedral, noticed that "a curious mistake has crept into some books, and that is, that Prior Silvester built the refectory, the dormitory, and the hostelry; nothing can show in a stronger light the necessity of going to the fountain head, and consulting the original documents themselves. Only two words are omitted; but these make all the difference. Silvester did erect such buildings, but the MS. adds, "at Waletune"; and it then goes on to describe the works he directed at Rochester." Mr. Ashpitel quoted this discovery with delight. His pen was often in his hand for the pleasure of his young friends, as in writing a Valentine; or for his older friends (especially the "Cocked-Hat Club" of the Antiquaries), as in writing a doggrel account of a day's amusement in the country. He occasionally contributed an article on a subject connected with art or literature to the "Morning Post" newspaper: and was also a constant contributor, chiefly of metrical compositions both in English and Latin, to the pages of that anomalous publication "The Owl," nearly from its commencement, for which assistance he received from the proprietors, a short time before his decease, an acknowledgement in the shape of a very rare work of art, which he valued as a liberal donation for his literary exertions, as well as for its special merits. As far as I have been able to learn, he did not often contribute directly to the "Builder," or "Building News," but in one or other of them will be found many of his literary labours for the Societies to which he belonged. The authorship was transparent of a letter published in the "Builder," November, 1857, signed "Verax"; and as this met with a reply in a strain and with a title which he considered to misstate in a manner entirely unwarranted the views which he held, he was irritated, and could not refrain from writing a second admirable letter to demolish the misrepresentations of the previous writer, who I am sure, never subsequently experienced from Mr. Ashpitel any expressions of personal affront or injured feelings. These three letters are well worth the perusal of students, for the great research, practical character, and lively writing, displayed in them. Only on one other occasion did I ever hear him express himself annoyed, and in that case he was assailed for not having done something which he really had done; otherwise he was above the usual petty jealousies of writers, and always urged that all professional and literary men should "agree to differ" in their views. He had no jealousy in his disposition.

Of this great equanimity of temper, the best evidence that can be taken, is that of Mr. Edmeston who had known him for the twenty-five years Mr. Ashpitel had been in practice, during which time the most confidential and friendly relations had been maintained between them, although for many years disconnected in business; on quitting the bedside just before the final attack commenced, he could say, that no unkind word had ever been uttered; and that exceeding kindness of heart, great disinterestedness, and a disinclination to speak ill of any one, were main features of the character that had so long been subject to his close observation. "The high moral tone," writes Mr. George Dennis, author of "The Cities of Etruria," and an old friend of Mr. Ashpitel's, "which pervaded all his thoughts, words, and actions—such a combination of great intellectual powers, moral excellence, and attractive qualities of heart,—is rarely met with in this life; and his friends have the melancholy assurance that they will never see his like again. To myself his loss will create a blank I can never hope to fill." "Mr. Ashpitel," records Mr. Baily, "had a kind heart, and a most philanthropic disposition; he always took an opportunity to serve a professional brother, particularly if in trouble; his advice was always worth having. On the occasion of an accident in a large new building in the City, many years

since, where a loss of life occurred, he immediately went to the spot and was engaged the whole of the day and next night in assisting the architect by procuring scientific evidence of the causes of the accident for the inquest which followed. This was only one of many such cases of assistance—and on those occasions he would set aside profitable business of his own, with no other motive than to do a kind and benevolent action." He had cause to complain, however, that such exertions were not always recognized.

He played well on the pianoforte, though very few of those acquainted with him were aware of it, for he never made a show of such talents; he revelled in the sublime conceptions of Beethoven, Mozart and Handel, of whose works he had a well-selected store. I have often been greeted, as an evening visitor, by a composition of one of his favorite authors, and the offer to continue playing as long as desired. Though quite able to improvise an accompaniment or a fantasia, he would rarely have been asked to play a second time for a vocalist, as his hand was energetic and would have drowned the song. "Once," writes Mr. Baily, "being in company with Mr. George Gilbert Scott, we were at Westminster Abbey examining that portion of the triforium known as the Muniment Chamber, which is over the eastern walk of the cloister; when on a sudden Mr. Turle touched the pedals of the organ in his best style. "What a grand *bass* that is," remarked Mr. Ashpitel, his musical feelings being influenced; "Yes," was the reply of Mr. Scott, thinking more of the architecture, "that *base* is remarkably fine, it girts nearly twenty inches." Music and books were his luxuries: he bought fine copies as if they were necessaries; had them bound for use; read and re-read them; and was extremely solicitous to obtain complete series of the writings of the authors in whom he delighted. It was this love of his library that greatly interfered with the necessary care of his health; he declined to accede to the recommendation of his physician made some time since to take a sea voyage, "for how could he go without his books." His movements were gentle, partly regulated by his lameness, which calamity may have perhaps been the cause of his choosing to have cats and kittens as familiar occupants of his studio rather than dogs: it was a similar partiality on the part of the Commendatore Canina that caused an early prepossession in each other's favour, which continued, as I have related, during the visit of the Italian archæologist to England. The difficulty of locomotion restricted his exercise in the open air, but he was enthusiastic in describing his pleasure in carrying a gun in a warren, and in steering a vessel. He delighted in boating, and wishing to promote the interests of the fisherman who generally assisted him, he made accurate drawings for a small vessel and astonished the man by the economy resulting from his drawing the sails to a large scale whereby the stuff was not cut to waste.

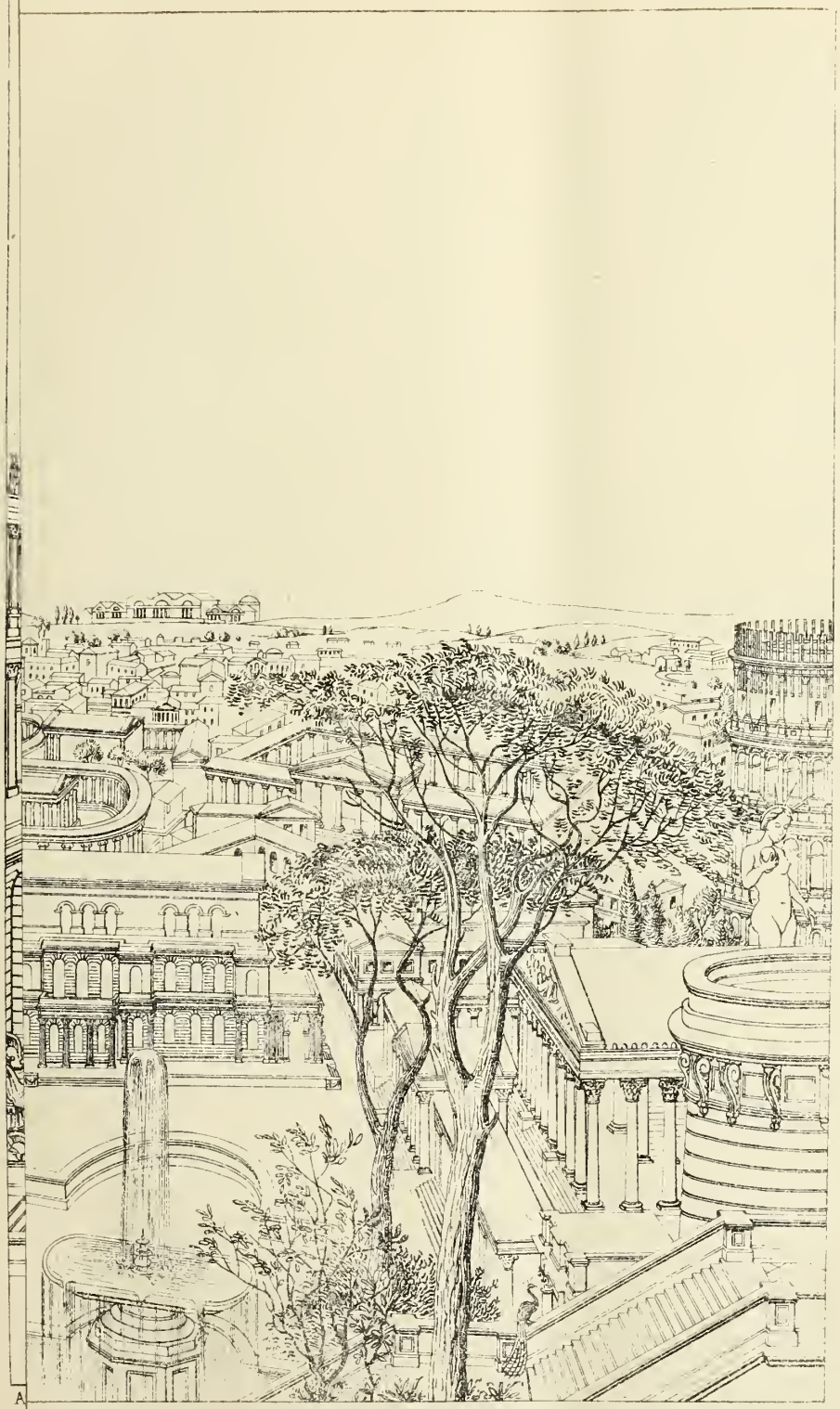
His features are left to us in an admirable photograph portrait taken not long since for exchange among the members of the Surveyors' Club, to which he had belonged for many years; and also in a medallion head executed at Rome by Signor Amici, sculptor to the Pope: his brother possesses a remarkably good portrait of him in oils by Frederick Walmisley, representing him sitting and sketching. Mr. Ashpitel left by Will his rare and valuable books (selected with much care and valued by him at about £3000.), with his collection of Etruscan and Antique Vases brought by him from Italy, to the Society of Antiquaries. To the National Collection at South Kensington he has committed the care of his two important pictures of "Rome." He was not unmindful of the Institute even in his last days, for he intended to found a prize to be called by his name; this object, members of his family have expressed a desire to carry into effect, as it is named in a document which he did not live to sign.

Such were Mr. Ashpitel's vigorous intellectual powers, pourtrayed in a faithful manner to the best of my ability, and such were their results in his short life of activity.

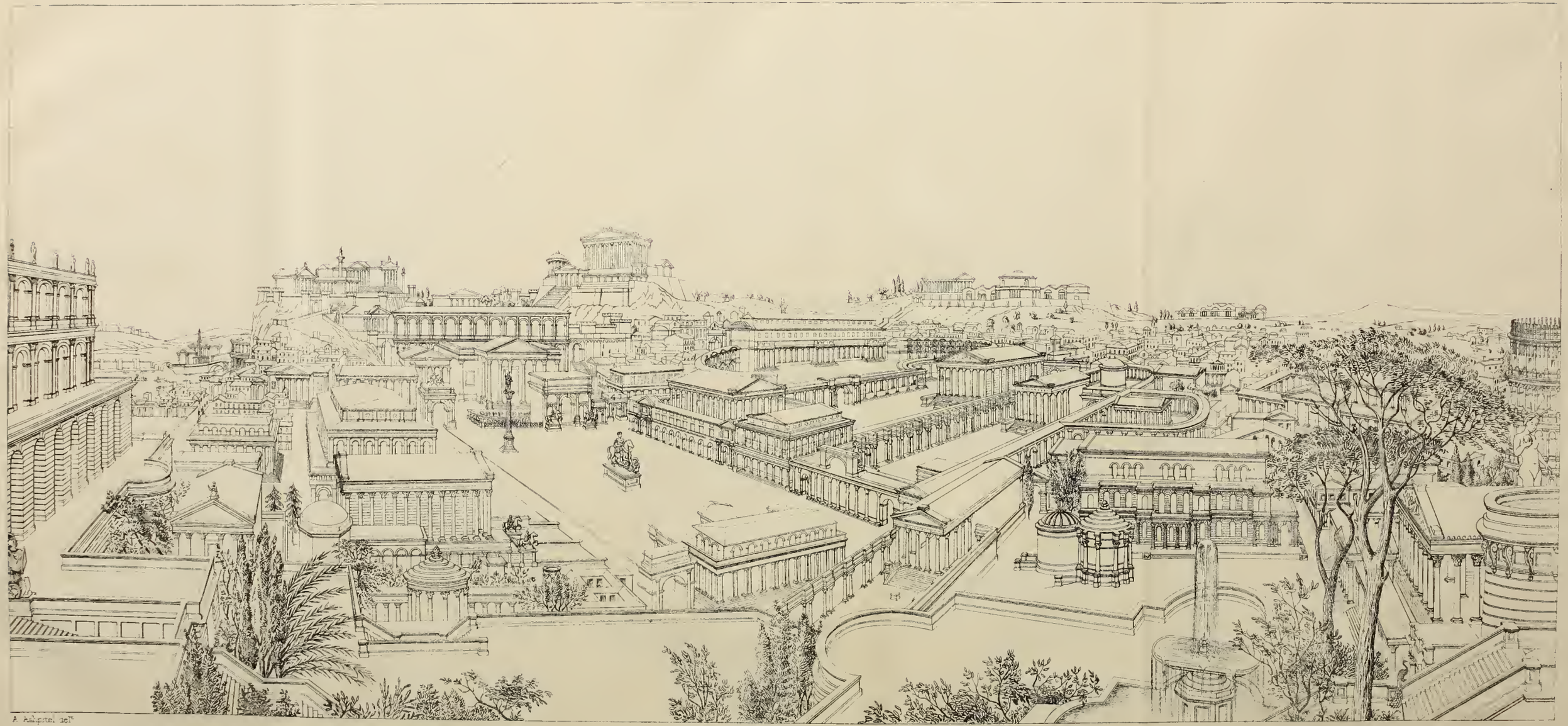
In closing this Memoir, I am tempted by some of his own *jeux d'esprit* to draw a "Morial" from his career for our benefit, and although I will not attempt to put it into verse as he would have done, I state my conviction that Ashpitel's error, after having suffered from the malaria, which he expected to outlive, was that of allowing his brain work to master the requisite care due to his infirmity.—That "Mr. Ashpitel sacrificed his life to his work" was the statement made to me by one in daily converse with him; work, whether bodily or mental, must have proper sustenance, the former without the latter is a certain premature decay. The death-ages of the members of his family led his friends to expect a longer life for him. It is, happily, unusual to feel that the death of a colleague is, for the time, irreparable to the surviving members of the profession to which we belong, and we soon find that the distinguished man whom we regret has left a post for which a successor can easily be found; but we must all feel that Mr. Ashpitel's loss to ourselves can only be expressed by the simple words, We have no one ready to take his place amongst us.

The PRESIDENT.—We have to thank our friend Mr. Papworth for an elegant memoir of our lamented fellow-member. I knew him for very many years, and I am sure not a word has been said to-night about him which we do not all re-echo with sincerity. His loss is a great one to me personally from the intimate acquaintance with him that I enjoyed. At the time of his decease I was myself ill, but I had a very kind letter from him, which, I believe, was almost the last he wrote. It was written from Ramsgate in a cheerful tone, and expressed a hope of recovery to his usual health, which hope, however, was unhappily not realised. It is a great gratification to have had placed before us such a memoir as we have heard of an excellent and distinguished man.

The usual vote of thanks having been passed to Mr. Wyatt Papworth, the meeting adjourned.



Lithographed at the R.I.B.A. by Kell Bros. Castle St. Holborn.



ROME AS IT WAS.

A

Lithographed for the R.I.B.A. by Kell Bros Castle St Holborn

A. Ansgate. del.

ROME AS IT IS

Lithographed for the R.I.B.A. by Kell Bros Castle St Holborn

Royal Institute of British Architects.

At the Ordinary General Meeting, held on Monday, 24th May, 1869, E. L'Anson, Vice-President, in the Chair, the following paper was read :—

OUTLINES OF METRONOMY; OR THE SCIENCE OF PROPORTION.

By W. Cave Thomas.

The Science of Proportion is the master science, for being founded upon the fact that all knowledge is ultimately resolvable into the simple element of quantity, it gives us a power of analysis, and a grasp of understanding not otherwise attainable. I have called this science Metronomy—from *metron* (a measure), and *nomos* (a law). In my essay, the 'Holiness of Beauty,'* I attempted to trace the doctrine of measure in the Sacred Writings, and in that of the 'Science of Moderation,'† the metric principle in the larger phenomena of nature, as well as in ethics, politics, and education. I now return to that special department of the subject which led me to this extended investigation, the principles of art. It was in seeking some stable criterion of judgment in art, that I obtained the first glimpse of the metric principle of rectitude, and from that time to this I have given my best patience and powers of thought to bring the doctrine of measure or proportion into form. But it is one thing to perceive the truth, and another to communicate it. If, perchance, some of you may have read my previous attempts to elucidate the subject, and thought them obscure, perhaps this lecture, which deals with those first thoughts and principles which induced me to devote so much time to the investigation, will be more intelligible. I am fully aware that those previous essays were very imperfect, and that an inverted order of developing the subject has been pursued instead of the right, so that this portion, which should have been first, is last completed; and instead of forming the introduction, takes the place of a final chapter, or conclusion.

It was a fundamental conviction with Socrates that it is impossible to start from one true thought, and be entangled in any contradiction with another true thought; knowledge derived from any one point, and obtained by correct method, cannot contradict that which has been obtained from any other point. "Man is the measure of all things," said Protagoras; "and, as men differ, there can be no absolute truth." "Man is the measure of all things," replied Socrates; "but descend deeper into his personality, and you will find that underneath all varieties there is a ground of steady truth. Men differ, but men also agree; they differ as to what is fleeting, they agree as to what is eternal. Difference is the region of opinion; agreement is the region of truth: let us endeavour to penetrate that region."

If men were perfectly rational, logical beings, the progress of truth would be uninterrupted; but being for the most part influenced by passion, and prejudice, they are more often swayed by rhapsodical sophistry than science and wisdom. Through what ages have men affirmed that "order is Heaven's first law," and almost with the same breath maintained, unconscious of the inconsistency, that if there be one evidence of genius stronger than another, it is the want of that very order, balance, or moderation

* The 'Holiness of Beauty; or the Conformation of the Material by the Spiritual.' F. S. Ellis, 33, King Street, Covent Garden.

† The 'Science of Moderation.' Messrs. Smith, Elder and Co., Cornhill.

affirmed to be the principle divine; have they insisted that genius is heaven-born, whilst admiring some favourite impostor's defiance of, and revolt from all rule.

The great philosopher we have just quoted, thought it a kind of impiety to importune the gods with our inquiries concerning things of which we may gain the knowledge by numbers, weight, or measure; it being, as it seemed to him, incumbent on man to make himself acquainted with whatever the gods had placed within his power. And a writer in the 'Philosophical Transactions,' in a somewhat similar vein, says,—"There are very few things which we know, which are not capable of being reduced to a mathematical reasoning: and when they cannot, it is a sign our knowledge of them is very small and confused; and where a mathematical reasoning can be had, it is as great folly to make use of any other, as to grope for a thing in the dark when we have a light standing by us." And Plato, with his grand contemplative intellect, appears to have caught a glimpse of the universality of proportional relation, possibly that quantity is the fundamental form of cognition; for when questioned as to what he conceived might be the occupation of a Supreme Ruler, he replied, "geometrizing continually." The deeper we study nature, the more conscious do we become of a measured order pervading the universe.

Language itself affords abundant evidence that we instinctively recognise quantity as the fundamental form of phenomena: for instance, in the constant recurrence of metric expressions in our spoken and written estimates of all kinds of existence. Take up any critical work, and you will soon light upon words expressing a quantitative estimate of error in excess or defect, on the side of the *too* little, or *too* much of what it ought to be, or of the right. All our adjectives, without being framed to a preconceived theory, but in obedience to the irresistible influence of the deep truth, recognise the necessity and universality of a quantitative estimate of nature by those degrees of comparison which enable us to express the much, more, or most, or the little, less, or least of a quality. And when these facts are pondered over and well considered, they lead to this great generalisation—viz., that all criticism is virtually an act of mental measuration, to the conviction that all exact cognition is quantitative, and therefore capable of being considered under the mathematical forms of measure and number, and that rectitude and error, beauty and deformity, discord and harmony, must have their special measures and numerical expressions. As, then, a quantitative estimate is inseparable from exact knowledge, we should expect to find, as we do, not only that the forms of language, but that science and commerce—anxious to be exact—are solicitous to obtain standard measures of weight, capacity, force, duration, &c., &c., and that the mathematics are the most fundamental and ancient of sciences. It is said the Chinese studied them B.C. 3000, and that they were taught to the Jews and by them to the Egyptians 2000 years before the Christian era. A table of square roots* was discovered incised on one of the slabs unearthed at Mossul. The balance, as typical of a measured adjustment, has been the emblem of justice from time immemorial. On the famous sarcophagus in the Soane Museum—supposed to be that of the father of the Pharoahs—men's merits and demerits are represented as being brought to the ultimate test of measure before the Supreme Judge. This shows the antiquity of the idea of proportion in connection with ethics. More than 500 years B.C. Pythagoras taught that numbers were the principles of things—that things are the copies of numbers. This would appear to me to be the doctrine of definite proportional relation distorted by tradition. Dr. Burney regards the story of that philosopher's discovery of the musical chords as a fable, yet it points to an endeavour to resolve harmony into definite metric elements. Mr. Lewes, however, in his Biography of Philosophy, thinks that Pythagoras did not merely regard numbers as the symbols of quantity, but as entities. This is possible, but Pythagoras

* Nimroud Antiquities, British Museum.

might nevertheless have had a just abstract mathematical conception of a pervading proportioned order in nature, such as that tradition attributes to him.

But not only do we find historical evidences of the antiquity of the mathematics, but of a period in which they appear to have been in the ascendant in the ruling of mundane affairs, and that ages before Vitruvius, Griffith, Hay, and others had turned their attention to the subject of harmonic proportion it had been thought upon and thought out. This is not said in disparagement of their labours, for the main fact insisted on by Vitruvius and Griffith is, that the ancients did possess a system of harmonic proportion. My own position, however, is this, that a science of proportion should be established on a more satisfactory basis than precedent, than conformity to ancient models. Among the Egyptian antiquities in the British Museum may be found diagrams of the proportions of the human figure,* as early as the 18th dynasty. Then, as bearing upon the same subject, turn to that remarkable passage the 13th verse of the 44th chapter of Isaiah, which virtually declares that the beauty of a man inheres in certain proportions; the passage has direct reference to plastic art, though that were the making of idols—"The carpenter stretcheth out his rule; he marketh it out with a line; he fitteth it with planes, and he marketh it out with the compass, and maketh it after a figure of a man, *according to the beauty of a man;* that it may remain in the house." And as showing the principle of measure extended in a remarkable way to public affairs in remote ages, we find King David trying his enemies by three standard measures. In the 8th chapter 2 Samuel it is recorded that "He smote Moab, and measured them with a line, casting them down to the ground; even with two lines measured he to put to death, and with one *full* line to keep alive." That is to say, those in excess or defect of an average or *full* standard were slain. This passage will be more completely comprehended by and by. There are many other important references to measure scattered through the sacred writings indicating the proportioned order of nature—that the winds, the mountains, the hills are balanced, and the waters weighed by measure. With these facts before us from the sacred literature, and a remote period of civilisation, Professor Smyth's theory that the pyramids were raised as indestructible exponents of a metric system appears to have a reasonable foundation.

In Classical Literature, too, numerous passages exist indicating a cotemporary, or more ancient metrological system—the famous "in medio tutissimus ibis," for instance; also the Ethics of Aristotle, in which the recognition of the mean, as the principle of rectitude, is the recognition of a quantitative or metric system of morality. It may be said that the Greeks only recognized the *mean* as a measure of rectitude in the same vague kind of way as the moderns; if so it must either have been a tradition of a more ancient science, or a partial perception of the truth. And we must recollect that Confucius, the Chinese philosopher had, centuries before Aristotle, entitled one of his essays upon morals, "The Immutable Mean." Later, we find Vitruvius professing a privileged insight into the metronomy of the ancients, but whose precepts appear, at present, without some connecting link, or more fundamental principles, to be merely conjectural; and whilst vaguely hinting at common harmonic principles governing music and architecture, really gives no sound scientific exposition of their connection. The subject of harmonic proportion, from the time of Vitruvius, remained stationary through centuries; with the revival of learning, and of the arts, came occasional works on the proportions of the human figure—one, if I remember rightly, by Albert Durer. These were, for the most part, founded on the Vitruvian tradition, or on measurements taken from the antique. The most important and concluding work of this series would, perhaps, be that of the Père Bouffier, which, I regret to say, I have not yet seen. My only knowledge of its existence is derived from a note of one of Sir Joshua's lectures.

* Figured in Lepsius's Auswahl.

Within the last twenty years, however, a current has been gradually setting towards a metrological investigation of the principles of beauty, and, looking at the scientific tendency of the age, the wonder is that it has not shown greater volume, and that such efforts should not have been more popular. Day by day every department of inquiry is being subdued to quantitative estimate, and brought within the domain of measure and number—astronomy, music and mechanics long since, and, gradually, chemistry, light, heat, sound, and even the subtle electricity. Then look at the activity of mechanical invention in respect to meters of various kinds, too numerous to mention, not only in the familiar forms of barometers, chronometers, thermometers, &c., but others of a different kind, exceedingly delicate and sensitive. It may be said, indeed, that the common occupation of all the scientific men of the day is that of measuring and numerically recording. I say, witnessing this metrological tendency of science, and knowing that most thinking men affirm that order is heaven's first law, it does appear strange that we should not have made greater efforts to comprehend the order and measure of that beauty which is also affirmed to be a principle divine. Let it not be said that this subject is not one with which science can dare to meddle. The metric principle of beauty is distinctly affirmed in the sacred writings, and we also know that the same principle has been successfully applied to a higher subject than art, that of morals, by Aristotle, and that his Ethics have remained a text-book in the great schools since the revival of learning.

Before the theory of light and colour was placed upon a sound basis, pictorial art had some pretext for claiming exemption from scientific analysis—mathematical investigation. Architecture, I believe, never made such a claim, but now that colours are known to be dependent on the number of vibrations affecting the retina in a given time, the last innermost line of excuse is levelled; for configuration, form, was long since perceived to be mere relative extension or proportional relation. It is not the higher senses of sight and hearing which any longer defy a quantitative analysis, it is the lower—those of taste and smell. Would it avail in argument to bring this fact forward to convince you that these are, therefore, of a higher order than those already laid open to scientific scrutiny?

Then let us consider the last great generalization or hypothesis which finds favour with some of our scientific men. I refer to that of the correlation of forces, which assumes matter to have but three elementary properties—force, extension, and duration—which, in their infinite permutations, produce all the phenomena of light, colour, sound, heat, electricity, scent, flavour, &c. &c. Admit this hypothesis, and it necessarily follows that all our experience must be fundamentally quantitative, or of degrees of force, extension, and duration.

Let us, however, analyse the experience we derive from each sense separately, aided by the inferences derived from general observation.

The sense of Sight. Of course we do not see the things, the noumena, themselves, but an impression upon the retina produced by a combination of rays of light modified by, and reflected from the object. These rays can only affect the retina in three modes: 1. The extent of surface on which they impinge; 2. The rapidity or force with which they impinge; 3. The duration of their action on the retina. Difference of colour is due to difference of vibrating force, and light and shade are due to the relative force of the rays reflected from the object. That which we call "form," is the general result of the reflected forces on the retina within certain boundaries, configuration, or limits. Every sensation of sight, therefore, is resolvable into the three elementary and quantifiable forms of force, extension, and duration.

The sense of Hearing. All impressions of this sense are resolvable into force and duration: the forces of impulse and vibration, and the duration of these upon the sense. The ear has, I believe, little if any sense of space; but of course force and duration are quantifiable.

The sense of Touch.—Impressions of this sense are reducible to the three forms of force, extension, and duration, and are, therefore, capable of being expressed in measure and number.

The senses of Taste and Smell. Here we are at present unable to trace the exact *modus operandi* of external agencies on the nerves; but this we do know, from the testimony of language, which must in some degree express our inner consciousness of results, that we do affirm flavours and odours to be *equal*, *more* or *less* pronounced and pungent, *stronger* or *weaker;* and that they last for a *longer* or *shorter* period of time. The quantitative estimate which we make of the experiences of these senses may, therefore, be received as testimony that these would also be capable of numerical statement, if we only knew the right means of obtaining an exact measurement of the operating forces. *We cannot, indeed, conceive of any change taking place in our sensible impressions apart from a quantitative change.* There are several remarkable passages in Aristotle which indicate a perception of this truth. Having passed the senses in review, he then touches on certain general questions relative to sensation, and of its divisibility *ad infinitum.* "If bodies are infinitely divisible, are the impressions they make on us equally so? The solution of these questions makes manifest why the kinds of colour, taste, &c. are limited, or finite. It is because in all things which have extremes there must also be intermediate points of limitation; now, contraries are extremes, and in all sensible impressions there are contraries, as white and black in colour, sweet and bitter in taste."

We have now analysed the five senses, and find that our ultimate experiences in each are capable of a more or less exact quantitative estimate; and if we attentively observe in what scientific men are most busied in reference to the phenomena of motion, light, heat, sound, electricity, &c. &c., with regard to the great planetary system itself, we shall find it to be measuring either force, extension, or duration. Nor can it be otherwise, for these are the elementary forms of our experience, and therefore of our ultimate knowledge of phenomena. Metaphysicians tell us that the two pure intuitions are space and time; but quantity is a form underlying both, and therefore more general than either.

I may now, I think, venture to affirm with confidence the general proposition with which I opened this discourse, viz. that quantity is the fundamental form of consciousness, all criticism virtually an act of mental mensuration; that right and wrong, beauty and deformity, harmony and discord, must have their measures and numerical expressions; and that all exact knowledge will ultimately be a branch of one great science—Metronomy.

"But it is not merely in preserving us from exaggerated impressions that numerical precision is desirable. It is the very soul of science; and its attainment affords the only criterion, or at least the best, of the truth of theories and the correctness of experiments. Thus, it was entirely to the omission of exact numerical determinations of quantity that the mistakes and confusion of the Stahlian chemistry were attributable,—a confusion which dissipated like a morning mist as soon as precision, in this respect, came to be regarded as essential. Chemistry is, in the most pre-eminent degree, a science of quantity; and to enumerate the discoveries which have arisen in it, from the mere determination of weights and measures, would be nearly to give a synopsis of this branch of knowledge. We need only mention the law of definite proportions, which fixes the composition of every body in nature in determinate proportional weights of its ingredients."

"Indeed, it is the character of all the higher laws of nature to assume the form of precise *quantitative* statement. Thus, the law of gravitation—the most universal truth at which human reason has yet arrived—expresses not merely the general fact of the mutual attraction of all matter, not merely the vague statement that its influence decreases as the distance increases, but the exact numerical rate at which that decrease takes place, so that when its amount is known at any one distance it may be calculated exactly for any other. Thus, too, the laws of crystallography, which limit the forms assumed

by natural substances, when left to their own inherent powers of aggregation, to precise geometrical figures, with fixed angles and proportions, have the same essential character of strict mathematical expression, without which no exact particular conclusions could ever be drawn from them."

Having arrived at the general conclusion that all phenomena have their quantitative estimates and numerical expressions, the next step is to establish the abstract theory of quantitative relation, in order to bring all the relations of measure and number within the grasp of the understanding. This may, at first sight, appear to be hopeless, as it once did to me. But it may be easily effected. The very same process which enables us to enlarge, or diminish any work by scale*, also enables us to contemplate a miniature of the infinitude of quantitative relation. The theoretical foundation on which we work, in enlarging or diminishing by scale, is that of *the infinite divisibility of the unit.* I made use of this principle in the ordinary course of things long before I came to perceive that the variation of ratio, or the relation of two quantities to each other, has limits. This will become evident on careful consideration, for in executing a work of art to different scales, each scale, though of a different absolute magnitude, must clearly contain precisely the same *relative* proportions, or the work could not be enlarged or diminished at will. The following algebraical formula will, perhaps, better express my meaning; it is a formula which appears to me to be fraught with suggestions to the mathematician and physicist, as well as the artist.

The Limits of Ratio, or Proportional Relation.

The mean quantitative relation or ratio in that of equality; the extremes 1 and 0. For let $\frac{a}{2} = \frac{b}{2}$, and let $\frac{a}{2}$ increase as $\frac{b}{2}$ decreases by an infinitesimal quantity δ, till $\frac{a}{2} + n\delta = a$, and $\frac{b}{2} - n\delta = 0$; then they will successively be to each other,

$$\frac{a}{2} + \delta : \frac{b}{2} - \delta$$
$$\frac{a}{2} + 2\delta : \frac{b}{2} - 2\delta$$
$$\frac{a}{2} + 3\delta : \frac{b}{2} - 3\delta$$
$$\&c. : \&c.$$

one half the terms being as much in excess of $\frac{a}{2}$, as the other in defect of $\frac{b}{2}$ or of $\frac{1}{2}$.

Cor. The tendency of proportional relation, or ratio, is either to parity or disparity, equality or inequality; these, therefore, are the only two possible tendencies of nature, and the above formula the universal calculus of quantitative relation between instances of the same kind.

You may have often been struck with the recurrence of the same proportions, or ratios, in an arithmetical progression. This, by the preceding formula, will always take place between the intervals which are duplicates of $0 : \frac{1}{2} : 1$; for instance.

$$\begin{array}{ccccccc} 0 & : & \frac{1}{4} & : & \frac{1}{2} & : & \frac{3}{4} & : & 1 \\ 0 & : & \frac{1}{2} & : & 1 & : & 1\frac{1}{2} & : & 2 \\ 0 & : & 1 & : & 2 & : & 3 & : & 4 \\ 0 & : & 1\frac{1}{2} & : & 3 & : & 4\frac{1}{2} & : & 6 \\ 0 & : & 2 & : & 4 & : & 6 & : & 8 \\ & & \&c. & & & & \&c. & & \end{array}$$

* There is a board in the British Museum, prepared by a painter of XVIII. Dynasty, showing that this method was then in use—It has on it a Figure of Thothmes III. drawn to scale.

the middle term in each being to the maximum extreme as $\frac{1}{2}$: 1, and the three middle terms as 1 : 2 : 3. It is therefore clear that ratio is limited, and that whatever the value of the unit divided may be, whether 0 : $\frac{1}{2}$: 1, or 0 : $\frac{1{,}000{,}000}{2}$: 1,000,000, the division of the unit yields precisely the same numerical relations or ratios.

To illustrate this position experimentally—Let *ba*, *ac*, be two sides of a square formed by a string passing over a pulley at *a*, and let the side *ba*, decrease as *ac* increases; then by the time the end *b* reaches *a*, *ac* will be gradually increased to twice its original length, and *ba* will have successively been in every possible ratio to *ac*, or of the two sides of a parallelogram to each other—if not it is impossible for the two sides of a parallelogram to be in any ratio to each other,—which is absurd.

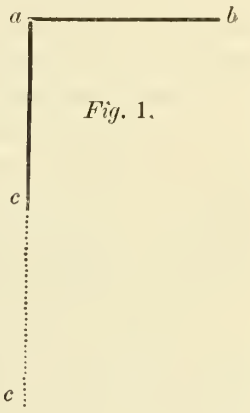


Fig. 1.

We have now reached a second stage of the inquiry, the first led to the conclusion that all our knowledge of nature is ultimately resolvable into quantitative relation, that quantity is the fundamental form of cognition. The second puts the entire compass of proportions before us. This compass therefore must be that of nature and judgment. The division of the unit gives the scale by which we measure the degree in which any phenomenon is manifested, and the calculus of ratio that by which to compare two quantities of the same kind.

Fig. 2 * gives another form by which the entire scale of quantitative relation may be illustrated. Let the maximum extreme represent unity, and imagine an *infinite* number of lines drawn parallel to and between it, and the minimum extreme 0, then these lines would represent every possible fraction or division of the unit. And if, starting from the mean, or $\frac{1}{2}$, we were to couple the corresponding terms on either side of it, these would be to each other in every possible ratio but that of equality; and it may be at once perceived that one half the terms are in excess, the other in defect of $\frac{1}{2}$: or, if certain intervals only in this gamut be represented, by an arithmetical progression, for instance, the following—

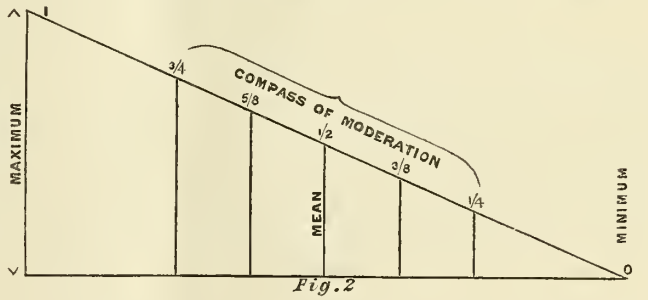


Fig.2

Maximum 1, $\frac{11}{12}$, $\frac{10}{12}$, $\frac{9}{12}$, $\frac{8}{12}$, $\frac{7}{12}$, $\frac{6}{12}$ — $\frac{6}{12}$, $\frac{5}{12}$, $\frac{4}{12}$, $\frac{3}{12}$, $\frac{2}{12}$, $\frac{1}{12}$, 0 minimum,

the sum of every corresponding pair is $\frac{12}{12} = 1$. These may therefore be called *compensating terms*, the one gaining as much as the other loses.†

Perhaps these scales will be better understood in their application to facts. Suppose, then, that 1 represent the maximum, and 0 the minimum of temperature in any locality, then the temperature of

---

* A very similar diagram may be found on a papyrus containing a treatise on Geometry and Arithmetic, British Museum.

†. This term will be better understood when we come to consider the law of compensation.

that place may vary as many degrees above as below the mean. The maximum we should call extreme heat, the minimum extreme cold. And we here perceive that the extremes and the mean of the manifestations of one kind of phenomenon are expressed by different terms; so, in ethics, audacity would be represented by the maximum extreme, courage by the mean, and timidity by the minimum extreme of the scale: as regards light and shade, extreme light by the maximum; half light, twilight, half tint, by the mean; extreme dark by the minimum. But there are many phenomena in which the minima can only be represented by an appreciable quantity; for instance, the minimum stature of human beings, suppose that to be 3 feet 6, the maximum 8 feet, then the mean would be 5 feet 9 inches. The readiest illustration of the variation of ratio as represented by the preceding calculus are the alternate changes in the relative lengths of the day and night. From the vernal equinox, or equality of day and night, the day gradually increases by as much as the night decreases till it reaches its maximum, the longest day; then declines by as much as the night lengthens till equality is again reached at the autumnal equinox, still declines to its minimum (the shortest day), and night attains its maximum. This is an epitome of the tidal action, or alternate ebb and flux of opposite qualities, which is alone possible in phenomena fluctuating within limits.

There is nothing more simple than the elements of this universal science of proportion, and nothing more difficult to apprehend in all its bearings, unless the limitations of quantitative relation be thoroughly perceived. The first important fact we have to keep steadily in view is, that the form of quantity underlies all our experience, all phenomena. If, then, we can delineate to the mind's eye a scale which shall represent the whole range of quantitative variation, the degrees of any quality may be represented by that scale, and what is meant by extremes, contrast, moderation, &c. explained by reference to it; for, from what we have previously stated, these words must imply quantitative relation, every aspect of which may be indicated on that scale. The extremes in the manifestation of any phenomenon are represented by the maximum and minimum; contrast certainly not by equality, but by great difference, and greatest contrast by greatest difference, or 1 : 0; moderation not by the extremes, but by the mean or mid-relations; unison not by extreme difference, but by equality, or an approach to equality; harmony not by great difference, inequality, or disagreement in proportions, but by an evenness of progression, or a restoration of balance by compensation. Having the compass, or, if you please to call it so, the gamut, of quantitative relation before us, the next step is to inquire if experience furnishes us with any formulated metric expression of rectitude of universal application. It does; and you will recognise it as one of the most ancient of scientific and guiding principles. It has come down to us unscathed through the ages, and is a household word. "Observe the *mean* in all things" is the form of its expression attributed to Pythagoras; "virtue lies in the mean," is the gist of Aristotle's ethics. "He that striveth for the mastery is temperate in all things," and "Let your moderation be known unto all men," are the expressions of the metric principle by St. Paul; from which we no doubt derive the aphorism in common use, "Moderation in all things." This is all very well as a principle of morals, you will perhaps say, but what has it to do with art? I will first of all beg you to note that it is the observance of the *mean in all things*, which is insisted upon by the deep reflective thinkers. But let us trace this doctrine awhile as upheld by some of our great writers. Turn, for instance, to Spenser's Legend of Temperaunce, forming the Second Book of the "Faërie Queene," which opens with the description of the beautiful and modest Medina, who impersonates the Golden Meane, and her two quarrelsome sisters; the latter representing the vicious extremes of excess and defect, who, in the poet's quaint language,—

"Strive her to banish cleane."

Pass on to Stanza 22 of Canto ix., where he commences his description of the House* of Temperaunce, and you may fancy you are reading a versified edition of some work on Harmonic Proportion, and unless you possess, or are given the clue, you will not have the slightest suspicion that Spenser is describing the human frame. It opens thus: —

> The frame thereof seemed partly circulare,
> And part triangulare: O worke divine!
> Those two the first and last proportions are;
> The one imperfect, mortal, foeminine;
> Th' other immortall, perfect, masculine;
> And twixt them both a quadrate was the base,
> Proportioned equally by seven and nine;
> Nine was the circle sett in heaven's place:
> All which compacted, made a goodly diapase.

Perhaps even after what I have just said, you will scarcely recognize the description of the human head in this stanza.† The whole of the Second Book is an exposition of the doctrine of proportion in reference to morality and beauty, so far as the mystical science of Spenser's day would permit. I could very copiously illustrate the doctrine of the *mean* from our earlier poets, but that I wish to preserve the scientific thread of my argument. We must not, however, leave the poets without noticing a very remarkable and decided passage from Dryden touching this subject. "There is," he writes, "a mean in all things, and a certain measure wherein the good and the beautiful consist, and out of which they never can depart." Hogarth and Reynolds as stoutly maintained the same principle, and I should have stated also the Père Bouffier, to whose work I previously referred. I will for the present only quote one terse sentence of Reynolds: "In creatures of the same species beauty is the *medium* or centre of all its various forms." After Sir Joshua, however, writers on æsthetics appear to have abandoned the metric principle of the good and the beautiful. One of our most esteemed authorities on art saw something absurd in the notion of beauty being the average of deformity, but this seeming absurdity vanishes as soon as we get an insight into the limitations of phenomena. It is, indeed, not a whit more absurd than that truth should be the average of every possible deviation from it, which is unquestionably the fact. And the recognized scientific method of getting at the truth is to obtain the average of a great number of facts, instances, observations. Beauty is to all possible human disproportion, or deformity, what truth is to every conceivable form of error on a particular subject. Let us see what a great scientific authority says upon obtaining the *mean* by averages. "But how, it may be asked, are we to ascertain by observation data more precise than observation itself? It is the number of observations which may be brought to bear on the determination of data that enables us to conclude the value of that which we do not see with greater certainty than that of quantities which we actually see and measure. Whatever errors we may commit in a single determination, it is highly improbable that we should always err the same way; so that when we come to take an average of a great number of determinations (unless there be some constant cause which gives a bias one way or the other) we cannot fail at length to obtain a very near approximation to the truth; and, even allowing a bias, to come much nearer to it than can fairly be expected from any single observation, liable to be influenced by the same bias."§

Although the aphorisms enshrining the immutable and golden principle of moderation must have

---

* The metaphor of "The House," in Ezekiel, may have a similar interpretation.

† I directed the attention of architects to this passage, in a letter to the editor of *The Builder*, some years ago.

‡ That we find a more frequent reference to this doctrine in our early writers is to be attributed to the greater attention given in former times in the schools to the study of Aristotle's works.

§ Sir J. Herschel's 'Outlines of Astronomy.'

often fallen upon my ears, the great truth they contained, as great truths often are, till the gates of the understanding are opened by some fortunate circumstance, was passed by, if not quite unheeded, only partially apprehended and as of little account. I happened at last, however, to think of the mean while casting about for some stable criterion of judgment in reference to art, and the ultimate quantitative form of our cognition flashed upon me as the light of a new discovery, and from that time to the present I have been endeavouring to bring the scattered doctrine of proportion or measure into form. I am sometimes inclined to suppose that this doctrine was long preserved by the Freemasons, and perhaps may be still, as an esoteric doctrine not to be communicated to the uninitiated. But, on the other hand, it may be said, that all great truths loom out dim and shadowy long before they assume definite shape, or their great importance is recognized.

You will observe that thus far I have done little more than historically trace the testimony of the ages to the metric principle, and to the *mean* being the immutable measure of rectitude in all things. But when the full import and universality of this principle first struck me, I said to myself, "If this be the great central truth I conceive it is, the records of astronomical science will bear witness to it, and on referring to them I found numerous passages affirming its truth in the following form, viz., that whatever aberrations or perturbations take place in the solar system they are periodically compensated, so that its *mean* state is in the aggregate preserved. And what principle should we expect to find guarded and immutable in the universe but that of rectitude? This great law which obtains in the larger phenomena of the planetary system also holds good in the lesser systems of phenomena within it, so that we are forced to conclude that every species of existence fluctuates within fixed limits, and that the only two tendencies in nature are to parity and disparity. The whole history of the earth and animated nature shows the former to be the ordained progressive tendency.

We have now attained a third stage of our inquiry. 1st. We arrived at the conclusion that the fundamental form of phenomena is quantitative. 2ndly. We have formulated the limits of quantitative variation and relation. 3rdly. It was shown that the central mid point or mean in the scale of relation is the symbol of rectitude, of beauty, of the moral form or ideal, and the metric representative of that stable point of equilibrium which is steadfastly guarded from subversion in the aggregate of the fluctuations and perturbations of the solar system.

Having surveyed the foundations of the science of Metronomy, let us turn to the current notions obtaining in regard to the proportions of the human figure. We have, as you are all aware, a set of traditional proportions* of eight heads, ten faces, &c. &c., but what surety have we that these are right? If they have been derived from the antique statues, we have, it is true, the warranty that they are the measures of what have been esteemed for ages perfect works.† This is, however, insufficient data for science, for it is well known that the eye and the ear may be so demoralized by a prejudiced habit, that ugliness may pass for beauty, and discord for harmony. But we can use the method of average to determine the true proportions of the human body with safety, because we know to a mathematical certainty that if our measurements be obtained from a great number of instances, individual, excessive and defective proportions will neutralize each other, and give us a close approximation to the mean, central, or ideal form. We cannot work out the human form, as many writers on aesthetics appear to think, from our moral consciousness, as it is humourously said the German did the Camel. The human form varies within certain limits, some individuals exceed in some, and fall short in other forms and qualities of the perfectly balanced mean. No proportions of the human figure can be relied upon which have not been derived by the scientific method alluded to. It is true the trained eye is, to a

* *Vide* Proportions of the Human Figure, according to Vitruvius, at the end.

† The Egyptians and the Greeks had several canons of human proportion.

great extent the meter of its experiences, and that it naturally averages, and rejects excess and defect. But in all branches of knowledge there is considerable advantage to be derived from possessing fixed standards for general reference. Then if we turn to works on architectural proportion, it does not satisfy the demands of scientific inquiry, though it were proved that certain famous structures were conformed in some way to the circle, the square and equilateral triangle, to be told that they were so conformed because these are the most perfect figures. We require to be informed why these figures have claims to be considered more perfect than the ellipsis, the parallelogram, or any less regular triangle. It is not satisfactory to say the circle, the square, and equilateral triangle are perfect figures, because they are. Let us, therefore, penetrate to the cause of this distinction. In the calculus of ratio we shall find that where variation is possible between two or more measures of the same kind, that equality is the mid or mean relation in which they may stand to each other. The circle has, therefore, been rated as the most perfect figure, because it is the very archetype of the mean, it is the very ultimate symbol of symmetry, and contains a greater amount of equality and including space, in relation to boundary, than any other figure. This equality and perfect symmetry gradually decline through the polyhedrons, to the square and equilateral triangle. There are, therefore, innumerable regular figures more symmetrical than the square and triangle, which are the least symmetrical of symmetrical figures. This is, perhaps, what Spenser means, when he says of the circle and equilateral triangle:—

"These two the first and last proportions are."

Of the regular solids, too, the pyramid and cube are the least symmetrical; the others the more so as they approach sphericity.

The only two possible tendencies in nature, as shown by the Calculus of Ratio, are to equality or inequality, to the symmetrical or unsymmetrical. This brings all discussion to a simple issue—Which is the Right, which the Wrong tendency? Which the tendency to Beauty, which to Deformity? Which to Harmony, which to Discord? All investigation on the subject of progressive development points to an advance towards equalization, or symmetry in nature. Man stands, with reference to animate creation, in the same position as the circle or sphere to geometrical figures: he is the most equalized in his organization, and is himself in the greatest perfection, when most symmetrical and balanced in his whole nature. All works of art, therefore, as all the works of nature must necessarily have a certain degree of relation or analogy to the circle when they are symmetrical, or *vice versâ*, become symmetrical when they are in some way conformed to the circle.

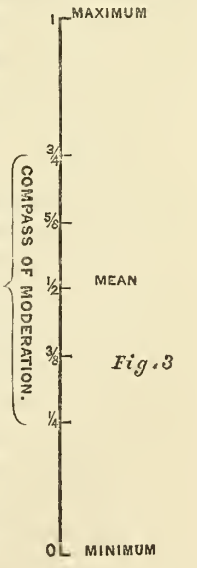


Fig. 3

But there are men who would fight to the death against the principle of equality, and yet repudiate the principle of disparity. Is there no argument to mitigate the idea that a final state of symmetry is that to which nature is tending? Is there no escape in a permissible moderate variation from absolute perfection? It is thought that there is—viz., variation within the compass of moderation, or half-way on either side of the mean towards the absolute extremes of excess and defect. Let 1, $\frac{3}{4}$, $\frac{1}{2}$, $\frac{1}{4}$, 0 represent the principal points of the scale of variation. Then 1 will represent the maximum of excess, 0 the extreme of defect; $\frac{1}{2}$ the mean of perfection; $\frac{3}{4}$ and $\frac{1}{4}$ the limits of moderation. We have then three distinct proportions within the compass of moderation, viz. 1 : 2, 2 : 3, 3 : 1—and if two other intermediate points be taken at $\frac{3}{8}$ and $\frac{5}{8}$, we have eight different proportions within its limits, that is to say 1 : $1\frac{1}{2}$, 1 : 2, 2 : 5, 1 : 3, 3 : 4, 3 : 5, 4 : 5, 5 : 6. One to two* is, I know, a recognized architectural proportion; it is

* There are three figures whose axes are in this proportion—the ellipse, rectangular parallelogram, and lozenge of mean variation.

the relation of mean variation, and of the octaves of music. And I should observe here, if I have not already called your attention to the fact, that the same scale of quantitative variation appertains to all fluctuating phenomena, either absolutely or fractionally, so that it would not be strange if correspondencies were to be discovered in the harmonies of the different arts; indeed, in the harmonies throughout nature. It is no longer a fanciful analogy between the arts of music, colour, architecture, &c.; they are fundamentally identified in a common quantitative basis. Such, then, are the broad foundations of Metronomy, not only applicable to art, but to morals, politics, and education. But we must not leave these considerations touching the abstract principles of beauty without noticing the fact that the Great Architect had other objects in view than abstract beauty in the proportioned adjustment of animated being—viz., adaptation to special purpose. The porcupine, the gorilla, the hippopotamus, and many other creations, are all admirably adapted, proportioned to their different purposes, but are by no means beautiful. Beauty is a certain conformity to perfect human vision. Adaptation to purpose may be beautiful, as in the perfectly formed human being, but is not necessarily so. This is a very important distinction to be kept in view, or our ideas upon beauty get into inextricable confusion. Art can seldom absolutely adopt either of these principles, but has more frequently to effect a compromise between the desire for abstract beauty and the demands of adaptation to purpose, and to blend the useful with the beautiful. The mean, however, is equally the measure of perfection of the ugliest species of being as of the genus, or rather of a species *homo*; for in creatures of the same species "perfection is the medium or centre of all its various forms."

Sir Joshua Reynolds says—"To the principle I have laid down, that the idea of beauty in each species of beings is an invariable one, it may be objected that in every particular species there are various *central* forms, which are separate and distinct from each other, and yet are undeniably beautiful; that in the human figure, for instance. The beauty of the Hercules is one, of the Gladiator another, of the Apollo another, which makes so many different ideas of beauty."

"It is true, indeed, that each of these figures is perfect in its kind, though of different character and proportions; but still neither of them is the representative of an individual, but of a class. And as there is one general form which, as I have said, belongs to the human kind at large, so in each of these classes there is a common idea and central form, which is the abstract of the various individual forms belonging to that class. Thus, though the forms of childhood and age differ exceedingly, there is a common form in childhood, and a common form in age, which is the more perfect as it is remote from all peculiarities. But I must add, further, that though the most perfect forms of each of the general divisions of the human figure are ideal, and superior to any form of that class, yet the highest perfection of the human figure is not in any one of them. It is not in the Hercules, nor in the Gladiator, nor in the Apollo, but in that form which is taken from all, and which partakes equally of the activity of the Gladiator, of the delicacy of the Apollo, and the muscular strength of the Hercules. For perfect beauty in any species must combine all the characters which are beautiful in that species. It cannot consist in any one to the exclusion of the rest; none must, therefore, be predominant, that none may be deficient—A figure lean or corpulent, tall or short, though deviating from beauty, may still have a certain unity on the whole not unpleasing." And again in a letter to 'The Idler':—"The black and white nations must in respect of beauty be considered as of different kinds, at least a different species of the same kind, from one of which to the other no inference can be drawn." These passages express a wonderfully intuitive perception of the metric system, which only require a few slight verbal changes to make them complete. In nature, each individual of a species varies in some special way from its perfect type or central form. Now, if we attentively study the whole range of natural phenomena, we find that any departure from a *mean state*, either in living beings or other phenomena, is only

accomplished at the expense, or by the disturbance of, that balanced condition; that is to say, some particular organization, period of time, or locality, is over-endowed at the expense of some other organization, locality, or period of time. That a special excess in one direction should inevitably be accompanied by a special defect in another, in any species of phenomenon, is a necessary condition of the inexorable law of compensation which pervades nature, and to which I previously had occasion to refer, as that by which the constancy and immutability of the mean is maintained in the aggregate of variations and perturbations of the planetary system. And you will perceive in the scale of quantitative variation and in the calculus of ratio, that if each pair of corresponding terms on either side of the mean be added together, their sum will constantly be the same; that is to say, one gains on one side as much as the other loses on the opposite. This may perhaps be better illustrated by numbers arranged as below, the numbers on the left representing proportions in excess, those on the right proportions in defect of the mean, each excess being compensated by its special defect, and *vice versâ*, the mean in every case being constant.

Excess.		Mean.		Defect.
12	.....	6	.....	0
11	.....	6	.....	1
10	.....	6	.....	2
9	.....	6	.....	3
8	.....	6	.....	4
7	.....	6	.....	5

And thus we are enabled to have a harmony by the contrast of opposite proportions in colours, notes, magnitudes, &c., by balancing one extreme by its corresponding and compensating counterpoint, as well as by an even or tenor combination. And if we wish to excite astonishment, to make a striking and unusual impression the principle of contrast is the only method. The proportions within the tenor of moderation are too even for this, and they who wish to astonish must leap the wholesome bounds of restraint, and bring extremes together in painting, sculpture, architecture, and music. But the effect is fatiguing, and this mode has but a temporary success, and passes as a fashion. It is because this self-same law of compensation obtains in human nature that we confidently predict that people whom we see running to one extreme will at some time or other be found hurrying to the opposite. It is astonishing how easily one traces the correspondencies throughout nature when once the scales of variation and ratio are thoroughly understood. At present I purposely abstain from making a too minute comparison of the harmonies of all the arts, or from inferring that they are perfectly identical; this portion of the subject will require further investigation, and I will not indulge in fanciful analogies. For the present I shall be content if it should be found I have laid the foundations of the science of proportion on a rock, and traced the fundamental identity of all the arts in a quantitative or proportional basis.

Although it has been demonstrated that all phenomena have a quantitative basis, it is yet probable that the same harmonic proportions are not common to all, absolutely identical; that the special limitations of each has with certain correspondencies special concords of its own. The limits of possible quantitative variation lie between 0 and 1, but the limits of musical harmony would appear to lie only between a section of that scale—viz., the ratio 1 : 2.* Sounds of which the vibrations in the same period are in this ratio are regarded as identical; but the two sides of a parallelogram differing in the same proportion do not appear equal, nor does such a figure produce the same impression upon the eye

* The ratio most easily recognised by the ear is that of 1 : 2 : 4 : 8, &c., that, namely, of the fundamental note to its octaves. Sounds of which the vibrations in the same period are in the proportion of 1 to 2 are so similar that they act on the ear only as repetitions of one another.

as a square. The progression of the octaves 1 : 2 : 4 : 8 : 16 : 32, &c., is mean progression; that is to say, there are as many degrees of gentler as abrupter progression, each term being the exact mean of that next succeeding it. 1 : 2, therefore, is in reference to gradation what the circle is to configuration —viz., the central form. To build the identity of the harmonies of music, form, and colour on their arbitrary division into three primaries, is to build, it appears to me, on a very unsound foundation. The harmonies of music and colour depending, as they both do, on the ratios of the vibratory movements of an elastic medium, may be very analogous. But if it be true, as alleged by some authorities, that the prismatic spectrum is composed of an infinite gradation of vibrations, and that its intermediate hues cannot be decomposed, all the colours of the spectrum are primaries,* and the combination of two of its so-called "primaries" to produce a "secondary" is a mere mechanical combination, like that of mixing two differently coloured powders. And as regards three primaries in form we might select the hexagon, the pentagon, and the square, with as much, if not more, show of reason than those generally proposed, because their number of sides are respectively 6 : 5 : 4, and numerically represent the ratios of a musical triad very agreeable to the ear. If, therefore, there is, as we fully believe, certain correspondencies between the harmonies of music, colour, and form, these will most probably be found to lie in the fact that a combination of certain ratios will produce a satisfactory result in either. Let us divide the unit into twelve, and take the regular combinations of numbers in twos and threes within the compass of moderation—

Maximum $1\ \frac{11}{12},\ \frac{10}{12},\ \frac{9}{12},\ \frac{8}{12},\ \frac{7}{12},\ \frac{6}{12},\ \frac{5}{12},\ \frac{4}{12},\ \frac{3}{12},\ \frac{2}{12},\ \frac{1}{12},\ 0$ Minimum

Compass moderation.

This division of the scale yields the following triads, in which the middle term is the mean of the extremes in each combination—

3 : 2 : 1 : : 9 : 6 : 3
4 : 3 : 2
5 : 4 : 3
7 : 5 : 3
6 : 5 : 4 : : G : E : C
9 : 7 : 5
8 : 7 : 6
9 : 8 : 7
7 : 6 : 5

The ratios 4 : 5 : 6 are those of the fundamental note, third and fifth, or C, E, G—a combination which I have no doubt would be agreeable in the proportioning of a room.

The dual combinations within the same limits are the following:—

1 : 2 : : C : C^1
1 : 3
2 : 3 : : C : G
3 : 4 : : F : C & G : D
3 : 5
3 : 7
3 : 8
4 : 5 : : C : E
4 : 9
5 : 6 : : D : F
5 : 7
5 : 9
6 : 7
7 : 9
8 : 9

* "Lastly it must be remarked that the intermediate tints produced by the union of two prismatic colours can be resolved by means of the prism into their original elementary colours, but that the intermediate colours of the true prismatic spectrum cannot be decomposed any further by the prism."

In the preceding dual combinations there are several which will be recognised as agreeable both in music and form. I have shown below, from the table of the lengths and rate of the undulations of the rays which produce the different colours, that the extremes of the number of undulations in a second are as 458 : 727,* or rather within the proportions of an octave.

TABLE .

TRIADS WITHIN THE LIMITS OF MODERATION APPLIED TO THE PROPORTIONING OF ROOMS, &c.

3 : 2 : 1†	4 : 3 : 2†	5 : 4 : 3
30 : 20 : 10	16 : 12 : 8	15 : 12 : 9
33 : 22 : 11	20 : 15 : 10	20 : 16 : 12
36 : 24 : 12	24 : 18 : 12	25 : 20 : 15
39 : 26 : 13	28 : 21 : 14	30 : 24 : 18
		G : E : C
7 : 5 : 3	7 : 6 : 5†	6 : 5 : 4
14 : 10 : 6	14 : 12 : 10	18 : 15 : 12
21 : 15 : 9	21 : 18 : 15	24 : 20 : 16
28 : 20 : 12	28 : 24 : 20	30 : 25 : 20
35 : 25 : 15	35 : 30 : 25	36 : 30 : 24
9 : 7 : 5	8 : 7 : 6	9 : 8 : 7
18 : 14 : 10	16 : 14 : 12	18 : 16 : 14
27 : 21 : 15	24 : 21 : 18	27 : 24 : 21
36 : 28 : 20	32 : 28 : 24	36 : 32 : 28
45 : 35 : 25	40 : 35 : 20	45 : 40 : 35

It will be seen that the extremes in none of these combinations exceed the ratio of 3 : 1, or the limits of moderation.

At the end an abstract will be found of the precepts of a writer on architectural proportion of the last century, who was deeply imbued with the conviction that the harmonic proportions of music and architecture should be the same. You will therein find the fanciful analogies which have been repeated, with slight variation, to the present day. The following is a quotation from the same author:—" According to Palladio, there are seven beautiful proportions, viz., a circle, a square, the diagonal of a square, a square and one-third, a square and a half, a square and two-thirds, and, lastly, two squares, and has given a section of each of those proportions, which, *though different from the rules I have laid down, agree in the number seven*, and that the length of no room exceed a double cube, or what he there terms two squares ; and with one observation worthy your notice, that the nearer a room (in particular a hall)

* If the number of the undulations of the rays which produce the different colours be arranged in the order of progression in which they stand in Sir J. Herschel's table, from the minumum to the maximum extreme, we have the following series :—Extreme red, 458, 477, 495, 506, 517, 535, 555, 577 (green), 600, 644, 658, 672, 699, 727 extreme violet, in which the sums of every corresponding or compensating pair on either side of the mean (green) are very nearly equal—viz., 1155, 1157, 1161, 1164, 1167, 1176, 1185. The 577 undulations (green) are to the mean of the whole as 577 : $583\frac{5}{14}$.

† 3 : 2 : 1, 4 : 3 : 2, or 9 : 6 : 3, 8 : 6 : 4, and 7 : 6 : 5 are triads in which the extremes are *compensating*, or their sums the same. A progression of forms in which the sum of the length and width is the same is always agreeable.

is to a square the more uniform and commodious it will be, though he, perhaps, conceals the reason why such proportions affect the eye and the imagination, which is only because they are such which nature herself dictates, unison being always harmony." You see this writer gives no solid reasons for such and such proportions; it is sufficient for him that his set of proportions and that of Palladio's, although differing in other respects, are the same in number as the notes of the octave. The passage concludes with the assertion of the general principle that "unison is always harmony." This is true in an abstract sense, equality being, as we have shown, the ideal of harmony, but absolute unison would appear to be a too perfect harmony for our present nature. The unison of the octaves in music and of the sides of a square or cube in form, if adopted in the dimensions of a hall, would be deemed by most critics too monotonous; the eye and the ear seem to require a departure from such absolute equality within moderate limits, or a breaking and restoring of equality or balance. And I believe that the triads derived from combining certain numbers, representing certain proportional divisions of the unit comprised within the limits of moderation, will be found more agreeable in the proportioning of rooms, &c. than any combination of the cube with its half, third, &c., or that of the double cube; the intervening mean suggesting that measure to the eye by which the two extremes in any of those triads could be equalized. The whole range of quantitative relation, however, is within your grasp to be examined, reasoned upon, and thought out for yourselves.

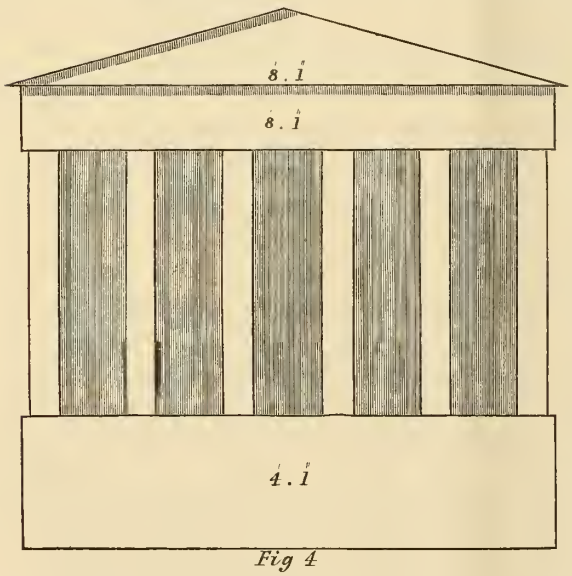


Fig 4

There is another matter to be considered in the proportioning of forms, viz., whether the proportions common to the human figure affect our sense so as to predispose us to repeat them in works of art. The proportions of the perfect human body are necessarily harmonious and beautiful to the eye; it is but to say that human vision and form are adapted to each other. Some architectural features should, perhaps, be proportioned in reference to this fact, for instance, a doorway. Though, if the Vitruvian canon of the human proportions be accepted, 4 : 1 the ratio of the sides of the parallelogram, which if adjusted to a man's greatest breadth, would just allow him to pass through erect, would appear too extreme to the eye, and it may be said that we do not estimate the proportions of the body in the gross in this fashion. Nevertheless, if the proportions of 8 : 1 and 4 : 1, those of the parallelograms which include the side and front views of a man, by this same canon be taken respectively as that of the column and inter-columnar spaces of a portico, and the variation in the *character* of the ratio differ as 8 : 1 and 4 : 1, or as 2 : 1, be observed in the principal divisions of the edifice, the result will be harmonious. Let the area occupied by the columns be as 8 : 16 (1 : 2) the frieze and entablature together 16 : 2 (8 : 1) the height of pediment to its length 2 : 16 (1 : 8), and the height of base 4 : 16 (1 : 4), &c. The foregoing remarks may serve to show that the subject of aesthetic proportion, as regards form, is complicated by the necessity there often is of rounding the edge of abstract reasoning with compromises suggested by mental associations, constructive necessities, &c. The eye may be regarded as the most perfect of the senses. It is the most symmetrical in its construction, its field of vision is a circle, and it takes in a

greater variety of impressions than either of the others; being thus, if I may so term it, the most cosmopolitan of the senses, it may be inclined not only to those proportions which are peculiarly human, but to the more abstract symmetrical forms. We know this to be the case, whether my reasoning may throw any light upon the subject or not.

In the progress of this investigation, whatever discrepancies may have been noticed as existing in the detail of the various harmonies, there are two important points which may be considered as established, viz., that our ultimate cognition in all the arts is quantitative, and that all experience points to the limits of moderation in proportion as the compass of rectitude and of enduring art. The following passages from Bishop Hall, and South, on "Moderation," might be translated so that the same metric principle underlying them would be equally applicable to the ethics of the arts as to human conduct:— "What is all virtue but a *moderation* of excesses? A *mean* that keeps the balance of the soul even, neither suffering it to rise too high on one side, nor to fall too low on the other." "What goodness can there be in the world without *moderation*, whether in the use of God's creatures or in our own disposition and carriage? Without this, justice is no other than cruel rigour; mercy, unjust remissness; pleasure, brutish sensuality; love, frenzy; anger, fury; sorrow, desperate mopishness; joy, distempered wildness; knowledge, saucy curiosity; piety, superstition; care, wracking distraction; courage, mad rashness." Shakespere too bears witness to the truth and universality of the principle in many passages, for instance in his advice to the players, he says, "use all gently, for in the very torrent, tempest, and (as I may say) whirlwind of your passion, you must acquire and beget a *temperance*, that may give it *smoothness*" "Use all gently" that is the epitome of what the science of proportion teaches. The secret of all that is, refined in art, in conduct. And I believe the enduring charm of Grecian Art to be due to the observance of this metric principle, the classical always keeping within that temperate zone, the limits of moderation.

Many writers, I am inclined to think, believe that an intimate acquaintance with æsthetic science is absolutely necessary to make the painter, sculptor and architect; they appear to have some indistinct notion that this kind of knowledge is derived from something external and may be transferred to the artist's nature, they forget that it is not, as physical science, so much that of external things as of the impressions they make upon us, the relation of these impressions to our conscious self,—that æsthetic science is, after all, but the science of what our sympathies and antipathies, our likes and dislikes, our approvals and disapprovals should be; to arrive at this we have to eliminate all that is prejudiced and transient in this respect, in order to determine the normal taste of perfect human organization. If organization be perfect, taste requires little extrinsic aid. The great painters, the great colourists were instinctively right before any science of the harmony of colour existed. Nevertheless, as it is a human privilege to think, men not only desire to possess the instinctive appreciation of, but *to know* what constitutes harmony and beauty. Nor can there be effective art teaching without this exact knowledge, for the teacher is in a sense a physician who has to prescribe and cure, and to this end correct feeling is of very little use without perfect understanding. W. C. T., 1869.

ADDENDA.

Extracts from a work on Architectural Proportion of the last century.

"The ancients never exceeded three diameters intercolumniation, except in the Tuscan order; but then they never made it less than one diameter and a half, generally approving the mean between three diameters and one diameter and a half, or two and a quarter which was called eustylos, and appropriated to the Ionic order, the diastylos to the Doric and the systylos to the Corinthian"*

"If the distance or intercolumniation be three diameters, the column should be seven and a half or eight in height as the Doric, (dyastylos); if two and one fourth, the column nine as the Ionic (eustylos); if two the column nine and a half as the Corinthian (systylos)."†

"Nature has taught mankind in music certain rules for the proportion of sonnds; so architecture has its rules dependent on those proportions as are in arithmetical harmony, and those I take it are dependent on nature. The square in geometry, the unison or circle in music, and the cube in building, have all an inseparable proportion; the parts being equal, the sides, angles, &c., give the eye and the ear an agreeable pleasure; from hence may likewise be deduced the cube and a half and the double cube; the diapason and diapente, being founded on the same principles in music."‡

"From hence may be considered likewise the subduple proportions of 2, 3 and 4 and their duplicates, and 3, 4 and 5, likewise of 3, 4 and 6; all of which I propose to explain, and apply their uses to the external part of building; and it may be observed, that as these proportions have never been published with regard to building, I hope this application of numbers will be an agreeable speculation for your future inquiries."

"The cube should never exceed 50, the cube and a half 60, the double cube 80 feet front." "The cube of 50 feet front will of course have the same depth and height, fig. C. If the front of the cube and a half be 60 foot, the depth and height will both be 40, fig. D. The double cube of 60 foot front will be 30 feet in depth and height, fig. E.

"The arithmetical proportions flow in the same progressive channel; and are to be made use of as necessity requires, 4, 3 aad 2, with their duplicates, make an agreeable front. If the front be 60 feet, the depth is 45, and the height 30, as shown in fig. G. by dividing it into four the depth is 3, the height 2; or if it be an 80 foot front, the depth will be by the same rule 60 and the height 40 feet."

"The arithmetical proportion of 5, 4 and 3, if the front be 60 feet; the depth will be 48 and the height 36.—Or if the front be 80 feet; the depth 60 the height 48 feet."

---

* These are nearly those of the three most distinct moderate proportions in the scale of quantitative variation—viz. 3 : 1, 3 : 2 : : 1 : $1\frac{1}{2}$ and 1 : 2 (see pages 167 and 171), 3 : 1 is the extreme verge of moderate proportion.

† It does not appear possible to give any á priori reason for the proportion of a column, its adaptation to purpose being the sole guide to its dimensions.

‡ This is a sample of the combination of fact and fancy, of that vagueness so often characteristic of writers on this subject. As I have previously stated, I believe that a closer investigation of the subject will show that the harmonic proportions of music and architecture have both ratios of agreement and difference. It should be borne in mind, too, that the eye has a sense of space which the ear has not.

"The arithmetical proportion of 6, 4 and 3, will, if the front be 60 feet, give a depth of 40 and height of 30 feet—Or if the front be 90 feet, the depth 60 and height 45."

"As I consider there is an affinity between Architecture and Music, so I have produced the proportions in the table from the same rules. In Music there are only seven distinct notes, and in Architecture seven distinct proportions, which produce all the different buildings in the universe, viz., the cube, the cube and a half, the double cube, the duplicates of 3 : 2 : 1, of 4 : 3 : 2, of 5 : 4 : 3, and of 6 : 4 : 3 produce all the harmonic proportions of rooms.

"Let me, for example, propose a building whose principal floor is 12 feet high, how to proportion the rooms by the preceding rules:—

"If the height be 12 feet.....	the cube will be.....	12	feet long,	12	feet broad.
	the cube and a half .	18	„	12	„
	the double cube.....	24	„	12	„
The duplicate of 3 : 2 : 1, if the height be 12 feet,		36	„	24	„
„ „ 4 : 3 : 2	„ „	24	„	18	„
„ „ 5 : 4 : 3	„ „	20	„	16	„
„ „ 6 : 4 : 3	„ „	24	„	16	„

"I shall only illustrate this rule by one example more, by supposing

"The height of story 18 feet ...	the cube will be.....	18	feet long,	18	feet broad.
	the cube and a half .	27	„	18	„
	the double cube	36	„	18	„
"The subduple	of 4 : 3 : 2	36	„	27	„
	of 4 : 4 : 3	30	„	24	„
	of 6 : 4 : 3	36	„	24	„
	of 3 : 2 : 1	54	„	36½	„

"Rule 1. To find the height of the opening of the chimney from any given magnitude of a room, add the length and height of the room together, and extract the square root of that sum, and half that root will be the height of the chimney."

"Rule 2. To find the breadth of a chimney from any given magnitude of a room add the length, breadth, and height of the room together, and extract the square root of that sum, and half that root will be the height of the chimney."

"Rule 3. To find the depth of a chimney from any given magnitude, including the breadth and height of the same, add the breadth and height of the chimney together, take one fourth of that sum for the depth of the chimney."

"Rule 4. To find the side of the square of a funnel proportioned to clear the smoke, from any given depth of the chimney, take three-fourths of the given depth, and that sum is the side of the square of the funnel. Observe only, that in cube rooms the height is equal to the breadth, and the foregoing rules are universal."

	Proportions of Room.						Chimnies. Broad.	High.	Deep.	Square.
Cube	12	feet high,	12	feet long,	12	feet broad	3 0	3 0	1 6	1 1½
Cube and half	12	„	18	„	12	„	3 3	2 8½	1 5¾	1 1½
Double cube	12	„	24	„	12	„	3 5½	3 0	1 7½	1 2½
The Subduple of 4 : 3 : 2	12	„	24	„	18	„	3 8	3 0	1 8	1 3
The Subduple of 5 : 4 : 3	12	„	20	„	16	„	3 5½	2 10½	1 7	1 2½
The Subduple of 6 : 4 : 3	12	„	24	„	16	„	3 7	3 0	1 7¾	1 1
The Subduple of 3 : 2 : 1 &c.										

A Table of Harmonic and Arithmetical Proportions, for Magnitudes of Rooms and Chimneys by Universal Rules.

		ROOMS.			CHIMNEYS.					
		Length.	Breadth.	Height.	Breadth	Height.	Depth.	Square of Funnel.		
The Cube.		12	12	12	3 0	3 0	1 6	1 $1\frac{1}{2}$		
		14	14	14	3 3	3 3	1 $7\frac{1}{2}$	1 $2\frac{1}{2}$		
		16	16	16	3 $5\frac{1}{2}$	3 $5\frac{1}{2}$	1 $8\frac{3}{4}$	1 $3\frac{1}{2}$	1st.	
		18	18	18	3 8	3 8	1 10	1 $4\frac{1}{4}$		
		20	20	20	3 $10\frac{1}{2}$	3 $10\frac{1}{2}$	1 $11\frac{1}{4}$	1 5		
		22	22	22	4 1	4 1	2 $0\frac{1}{2}$	1 $6\frac{1}{4}$		
Cube & a half.		18	12	12	3 3	2 $8\frac{1}{2}$	1 $5\frac{1}{4}$	1 $1\frac{1}{2}$		
		21	14	14	3 6	2 $11\frac{1}{2}$	1 7	1 $2\frac{1}{4}$		
		24	16	16	3 9	3 2	1 $8\frac{3}{4}$	1 $3\frac{1}{4}$	2nd.	
		27	18	18	3 $11\frac{1}{2}$	2 $4\frac{1}{2}$	1 $9\frac{1}{4}$	1 $4\frac{1}{2}$		
		30	20	20	4 $2\frac{1}{2}$	3 6	1 11	1 $5\frac{1}{4}$		
		23	22	22	4 5	3 8	2 $0\frac{1}{4}$	1 6		
Double Cube.		24	12	12	3 $5\frac{1}{2}$	3 0	1 $7\frac{1}{2}$	1 $2\frac{1}{2}$		
		28	14	14	3 9	3 3	1 9	1 $3\frac{3}{4}$		
		32	16	16	4 0	3 $5\frac{1}{2}$	1 $10\frac{1}{2}$	1 $4\frac{1}{6}$	3rd.	
		36	18	18	4 3	3 8	1 $11\frac{1}{4}$	1 6		
		40	20	20	4 $5\frac{1}{2}$	3 $10\frac{1}{2}$	2 1	1 $6\frac{1}{2}$		
		44	22	22	4 8	4 1	2 3	1 8		
Proportion. 4, 3, 2.		24	18	12	3 8	3 0	1 8	1 3		
		28	21	14	4 0	3 3	1 $9\frac{1}{2}$	1 4		
		32	24	16	4 3	3 $5\frac{1}{2}$	1 11	1 5	4th.	
		36	27	18	4 6	3 8	2 $0\frac{1}{2}$	1 6		
		40	30	20	4 $8\frac{1}{2}$	3 $10\frac{1}{2}$	2 $1\frac{3}{4}$	1 $7\frac{1}{4}$		
		44	33	22	4 $11\frac{1}{2}$	4 1	2 3	1 8		

		ROOMS.			CHIMNEYS.					
		Length.	Breadth.	Height.	Breadth	Height.	Depth.	Square of Funnel.		
Proportions. 5, 4, 3.		20	16	12	3 $5\frac{1}{2}$	2 $10\frac{1}{2}$	1 7	1 $2\frac{1}{2}$		
		25	20	15	3 $10\frac{1}{2}$	3 $2\frac{1}{2}$	1 9	1 $3\frac{3}{4}$		
		30	34	18	4 3	3 $5\frac{1}{2}$	1 $11\frac{1}{4}$	1 5	5th.	
		35	28	21	4 $7\frac{1}{2}$	3 9	2 $1\frac{1}{2}$	1 $6\frac{1}{2}$		
		40	32	24	4 11	4 0	2 3	1 8		
		45	36	27	5 $2\frac{1}{2}$	4 3	2 $4\frac{1}{2}$	1 $9\frac{1}{4}$		
Proportions. 6, 4, 3.		24	16	12	3 7	3 0	1 $7\frac{3}{4}$	1 1		
		30	20	15	4 $0\frac{1}{2}$	3 $4\frac{1}{2}$	1 10	1 $4\frac{3}{4}$		
		36	24	18	4 5	3 8	2 $0\frac{1}{4}$	1 6	6th.	
		42	28	21	4 $9\frac{1}{2}$	3 $11\frac{1}{2}$	2 $2\frac{1}{4}$	1 $7\frac{1}{2}$		
		48	32	24	5 1	4 $2\frac{1}{2}$	2 $3\frac{3}{4}$	1 9		
		54	36	27	5 5	4 6	2 6	1 10		
Proportions. 3, 2, 1.		24	16	18	...	...	...	...		
		30	20	10	3 $10\frac{1}{2}$	3 $2\frac{1}{2}$	1 9	1 $3\frac{3}{4}$		
		36	24	12	4 3	3 $5\frac{1}{2}$	1 $11\frac{1}{4}$	1 5	7th.	
		42	28	14	4 $7\frac{1}{2}$	3 9	2 $1\frac{1}{2}$	1 $6\frac{1}{2}$		
		48	32	16	...	...	...	...		
		54	36	18	...	...	...	...		
Examples.		12	12	12	3 0	2 0	2 6	1 $1\frac{1}{2}$	1st.	
		18	12	12	3 3	2 $8\frac{1}{2}$	1 $5\frac{3}{4}$	1 $1\frac{1}{2}$	2nd.	
		24	12	12	3 $5\frac{1}{2}$	3 0	1 $7\frac{1}{2}$	1 $2\frac{1}{2}$	3rd.	
		24	18	12	3 8	3 0	1 8	1 3	4th.	
		20	16	12	3 $5\frac{1}{2}$	2 $10\frac{1}{2}$	1 7	1 $2\frac{1}{2}$	5th.	
		24	16	12	3 7	3 0	1 $7\frac{3}{4}$	1 1	6th.	
		30	20	10	3 $10\frac{1}{2}$	3 $2\frac{1}{2}$	1 9	1 $3\frac{3}{4}$	7th.	

"The use of the Table. Let the given height of the room be 12 ft. to the inch and a half, the 2nd proportion, then you will find the breadth of the room 12 ft., the length 18 ft., and in the same line the proportion of the chimney, viz. 3 ft. 3 broad, 2 ft. $8\frac{1}{2}$ in. high, 1 ft. $5\frac{3}{4}$ in. deep, and 1 ft. $1\frac{1}{2}$ in. the side of the square of the funnel."

The same writer also gives the following rules for proportioning the lights to rooms :—"Multiply the length and breadth of the room together, and the product by the height; the square root of that sum will be the superficial area in feet."

"Example.—Suppose the dimensions of a room to be in the arithmetical proportion of 5, 4, and 3—20 feet long, 16 broad, and 12 feet high. The cube, or product of its length, breadth, and height multiplied together is 3840, the square of which is 62. The height of the story being 12 feet, divide the 62 feet into three windows, and each window should have 20 ft. 8 superfice, 6 ft. 5 by 3 ft. 2, or windows of two diameters."

PROPORTIONS OF THE HUMAN FIGURE, ACCORDING TO THE ANCIENT GREEK CANON,* PRESERVED BY VITRUVIUS. (*Lib.* 3, *Cap.* 1.)

"From the chin to the highest point of forehead $\frac{1}{10}$ of the whole stature. From the wrist to extremity of the middle finger $\frac{1}{10}$. The head from chin to top of scalp $\frac{1}{8}$. From top of chest to highest point of forehead $\frac{1}{7}$. To top of scalp $\frac{1}{6}$. From the centre of a line on a level with the nipples to top of scalp $\frac{1}{4}$.

* Supposed to be that of Polycletus.

" The face divided into three equal parts from chin to nostrils, from nostrils to between the eyebrows, from eyebrows to top of forehead.

" The foot is $\frac{1}{7}$ of the entire heigth. In the antique it is generally more than $\frac{1}{7}$, and less than $\frac{1}{6}$.

" The cubit $\frac{1}{4}$ (from elbow to end of middle finger.)

" Across the chest $\frac{1}{4}$.

" The width of the arms extended the same as height." *

Length of foot $\frac{2}{13}$ of entire height; depth of chest do. do.; depth from front of thigh across glutæus do. do.; depth of waist $\frac{1}{9}$ entire height (additions W.C.T.)

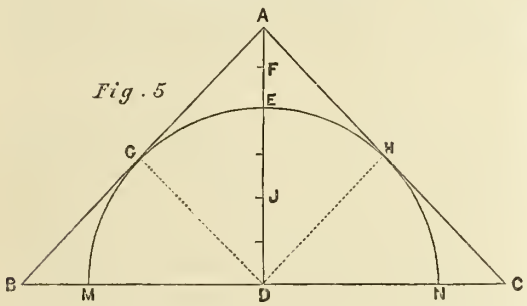
From ground to below knee, $\frac{1}{4}$; from this point to pubis, $\frac{1}{4}$; from pubis to level of nipple, $\frac{1}{4}$; from level of nipples to top of scalp, $\frac{1}{4}$; breadth of waist same as measure from navel to arm pit.

When arm is extended, hanging close to the side, the fingers reach to middle of second $\frac{1}{4}$ from ground, figure being erect; width of foot $\frac{1}{16}$ entire height.

Draw a right angled triangle, having the two sides, A B and A C, subtending the right angle equal to each other. From the centre D of the hypotenuse C B, join D A; with D as centre, and with the line D H, perpendicular to A C, as radius describe the semicircle M, G, H, N. Divide the radius D E into four equal parts; cut off from E A, E F equal to one of those parts.

CIBSON'S DIAGRAM.

Fig. 5



The diagram thus constructed contains all the principal proportions of the human figure.

1. The hypotenuse, or line C B, measures from the heel to the middle of the patella. From the middle of the patella to the superior spinous process of the ilium, and from the bottom of the abdomen to the pit of neck.

2. Either of the sides A C or A B measures from the instep to the bottom of the patella. From the top of the patella to the bottom of the pubis. From a little above the navel to the pit of the neck. From the knuckle of the middle finger to the elbow; and from the elbow to top of the shoulder.

3. The radius D E represents the length of the face, and the projection of the foot from top of instep to end of second toe.

4. The space D I (half the radius) will be the length of the neck from the top of sternum to chin.

5. The space D F represents the length of the head, from the chin at its junction with the neck to the top of the scalp.

VI. The line D A represents the length of the foot, measured from the heel to end of second toe.

---

* These proportions have been derived from the careful work by Joseph Bonomi, Fellow of the Royal Society of Literature, and Member of the Syro-Egyptian Society, to which the reader is referred for further details. " The Proportions of the Human Figure, according to the Ancient Greek Canon, preserved by Vitruvius, Second Edition; also a Canon of the Proportions of the Human Figure, founded upon a diagram invented by John Gibson, R.A. With Description, Practical Application, and Illustrative Outlines. Chapman and Hall, Piccadilly. 1857."

† The Egyptians had at different periods three different canons; " One belonging to the most ancient Pharaonic Monarchy; another later than the twelfth dynasty, when Thebes first begun to flourish; a third which appears at first, in the time of the Psammetichi, with an entire alteration in the principle of the division, and which remained unaltered till the time of the Roman Emperors. The last is the same which Diodoros expressly mentions in his First Book."—'Letters from Egypt, Ethiopia and the Peninsula of Sinai,' by Dr. R. Lepsius. H. G. Bohn, London, 1853.

This diagram may be developed by dividing the centre height of the intended figure into 19 parts, and taking two of them as radius, as from the hypotenuse taken equal to the length of the leg, from the heel to the middle of the patella, and thus other portions of the body may be made the generating measure of the diagram. It is a singular coincidence that the ancient canon used by the Egyptians for the erect figure was divided into nineteen parts. The height of sitting figures fifteen of the nineteen.†

The Chairman having invited discussion,

Mr. Dawson, Fellow, said—The learned author of the paper has spoken of the perturbations of the planets, as an instance of the all-pervading law of compensation, or mean measure of proportion, for which he contends. I believe it is now generally understood that the present decrease in the variation of the compass from the true North point is attributable to the diminishing velocity of the earth round the sun. I should be glad to hear the views of the author as to the operation of the law of compensation in this instance:—If it is true that for many years past the velocity of the earth through its orbit has been diminishing, it is interesting to know the probable causes of the anticipated compensation for that annual diminution, and the probable period of its commencement.

Mr. Cave Thomas,—The compensation must take place at some time or other. I do not give that as my own experience, but as stated by Sir John Herschell. Lagrange demonstrated that whatever perturbation occurs in excess of a mean state, will at some time or other be compensated by an equal and opposite one in defect, that is to say the equilibrium will be restored. It is by such compensation that the stability of the system is maintained.

Professor Kerr, Fellow, in rising to propose a vote of thanks to Mr. Cave Thomas, referred to the presence of Professor Ansted and the Rev. R. Burgess, who he hoped would favour the meeting with some observations; wherefore he would confine himself to a very few remarks. He was not one of those who are inclined to depreciate the endeavours of such thinkers as Mr. Thomas to penetrate into what he would call, not the unknowable, but more scientifically speaking the unknown: but although he would be one rather to encourage such efforts, yet at the same time he could not allow the lecturer to expect that architects, as practical men in the matter of proportion, dealing with it in their every day work, would be found to agree with all he had said, looking at his propositions as applied to architecture. Mr. Thomas's fundamental idea seemed to be to some extent identical with the hypothesis of that philosopher of the old Greeks, who started with "Number" as the essence of all things. Mr. Thomas did not expressly say so; but if they accepted this as being in another form a representative notion of what that gentleman had been teaching, they would not, he thought, be far wrong practically. At any rate he professed that the metric element lies at the root of all good. And, to persuade his hearers to entertain the principle, he first of all definitely quoted the ancient Greeks. That, Professor Kerr considered, was scarcely fair, because the Greek philosophy was well known to have been long obsolete—in fact superseded by a philosophy of an entirely different order. Therefore, when for example the proposition attributed to Socrates was quoted, viz.:—that it is impossible to start from one true thought and be ultimately involved in the contradiction of another true thought, Mr. Thomas must be asked to remember that modern science altogether repudiated such reasonings from first principles, *a priori*, unless previously ascertained to be laws by investigation *a posteriori;* so that even the most specious and apparently indisputable of such Socratic maxims were of no sort of practical value in discussions and inquiries of the kind in hand. However, having taken up the position that numerical correspondence is the essence or index of good and evil, Mr. Thomas did not attempt to test that dogma before going farther, but proceeded, quite in the ancient *a priori* manner to devise an entire system certainly somewhat skilfully elaborated, although not reduced to much precision of application, of which, it must be said

candidly that for want of being established on a proper basis at the outset, it remained unsupported to the end. It was no doubt true that the metric principle, as the most simple form of judgment, might be taken to bear a certain analogy to all kinds of judgment; in other words, our judgment of number must be so far similar to our judgment of anything else; and it might even be suggested with regard to the proportion of forms, that its utmost complexity is only similar to the complexity of algebraical equations; but certainly it did not follow that by accepting as a dogma the mere idea of metric proportion we could become capable of understanding the arcana of artistic philosophy. Therefore when the lecturer exhibited the shifting of one of two discs upward and the other downward, and thus showed that the pair were passing through a series of infinitely varied proportions, of course such was the fact; but what did it prove? Surely it could not be pretended to explain in any way what the meeting desired to know; namely, why it is that certain proportions are pleasing, and certain other proportions not pleasing. If Mr. Thomas were to point out a variety of ways in which two and two always make four, never more and never less, and to argue that upon some similar principle the mind perceived a similar relation in objects of form to that which the same mind perceived in such questions of numbers, perhaps most of the audience could follow him. For instance, as regards himself he had always held that the true rules or laws of proportion or form were to be found in arithmetical relations rather than in geometrical. But Mr. Thomas went in quite a different direction from this; he endeavoured to fix them to certain canons, which were not ascertained facts at all, nor even legitimate theories, but mere hypotheses, and after all by no means definite in their application; and therefore he called upon them to deduce with him a whole scheme of nature. Very likely his own vision travelled much farther over its accustomed field than the eye of another could follow; but at any rate he must not expect others to see with him that which in the ambiguity of language he was unable to render so clear as he could wish. Again, when he came to discourse upon the doctrine of The Mean, they were bound to tell him that that theory was an exploded one. It was very easy merely to affirm *a priori* that perfection lay in the mean, and having affirmed it to argue thereon. This had been frequently done before, and in various forms; and there was a certain analogical speciousness about all such principles. But coming to facts and to classified observations, they knew better. They actually ascertained that perfection was *not* in The Mean. They could not be mistaken about it. If we were to take a number of men at random, and to deduce the mean proportions of figure from those collected examples, he said the mean so obtained would assuredly not be perfection, but very far from perfection: and it was doubtful whether the extreme itself, in this country, at least, would be perfection. On the contrary the perfection of the human figure was a certain balance of proportions which was insensibly understood, recognised and appreciated by the intellect in consequence of a more or less large experience in the observation of that particular subject; and to say that all we had to do in order to arrive at perfection was to cast up as it were an arithmetical total and divide it by the number of instances involved in the sum, was an easy way of suggesting a plausible theory, but a most fallacious way of arriving at a reliable principle.* However he would give Mr. Thomas all credit for the efforts he was making; and even when such a thinker went so far as to profess to bring the principles of

* The doctrine of the perfection of THE MEAN, as I take it, is this. Given Perfection; aberration in any one direction is infinite; in the contrary direction infinite also; therefore perfection is the mean between these two infinites of imperfection. It needs no logical training to see that this involves a fallacy, and that, indeed, it fails altogether to attach to the assumed perfection any further warrant than the assumption with which it started. For example, take the case of the proper proportion of length between the head and the figure; to say that a collection of examples will produce a mean which will be found to correspond with our instinctive preference is well known to be a mistake: on the other hand, to say that the accepted head may be elongated and shortened to equal infinities, and that therefore this accepted proportion is the mean, would be equally correct, whether the proportion were one half or one twentieth.—R. K.

virtue and excellence of character into something like a metric system, he for one felt that he had no right to discourage him. Whether Mr. Thomas would ever be able to reduce one's behaviour to the rule of three he did not know. But there was another such theory, and still more incomprehensible, which had been started in this room a little time ago in a very bold manner. It was to the effect that a man's character was to be judged of by the quality of his art, and that a bad man never did make good art. The fallacy involved was obvious, and no one took the trouble to contradict it. This lecturer, however, was on superior ground: he did not outrage their feelings, even, if he started principles which they could not understand. He had great pleasure in moving a vote of thanks to Mr. Cave Thomas for his paper.

Professor Ansted, Hon. Member. I do not feel that I have much to say upon a subject so large, and so difficult to bring to bear upon any points of practical utility. It seems to me that this great question of bringing the abstract laws of proportion, whether expressed in arithmetical or geometrical language, upon the practice of the fine arts and architecture, is one which may some day be of great interest, but which at the present moment can hardly be said to be sufficiently advanced to have practical importance. There is a time, no doubt, in the history of all art and science at which general principles—principles involving various departments of science and mathematics, may come into play; but that time is, I fear, distant. And if this is the case generally, it is much more so in the case of that science which relates to abstract numbers. I make these remarks without any special knowledge of the full meaning of the author of this paper, and because the subject suggested is too abstruse to follow by hearing the communication once read over. At any rate, I am sure that if there is anything of importance in it, it must be thought out carefully by subsequent consideration: still, from hearing the paper, it seemed to me that it afforded hardly sufficient grounds to justify the drawing of any general conclusions with regard to those views of proportion which have been put before us. We all know the general abstract rules which have been handed down to us from time immemorial, and we know the application of those rules in the ordinary way; but when we come to connect them with morals on the one hand, and politics on the other, and extend them to all other departments of knowledge, I repeat that I think we are not sufficiently advanced to be able to make general use of this abstract science of numbers as a principle to guide us. At the same time, like all metaphysical subjects, it is fascinating to those who pursue that branch of knowledge. As far as this Institute is concerned it is its duty to recognise any question which may bear upon the harmony of art, and in that respect the paper may be a help to those who think deeply upon the abstract elements of their science. As far as I am personally concerned, in my department of knowledge, though I do not quite see the application of it, I can, I think, perceive the direction in which it points, and the generalities to which it turns in connection with abstract science and physical science. We understand the laws by which certain forces in nature are exerted; we believe that there is a certain quantity of motion which resolves itself into force, and is developed in various directions. If you have it in the one case you have it not in the other, and this seems to me to be the point at which these relations, for the present, terminate. At the same time, as I have already said, to those of you who are in the habit of thinking upon abstract questions, and connecting them with art, it is well to know not only what were the views of Greek philosophers, but what is being done in modern times upon this subject.

The Rev. Richard Burgess, Hon. Member, made a few remarks upon the effect produced by architectural proportion, taking, for instance, the portico of the church of St. Martin's-in-the-fields, he did not think that the delight experienced by contemplating an object of that nature could be explained on metrical principles.

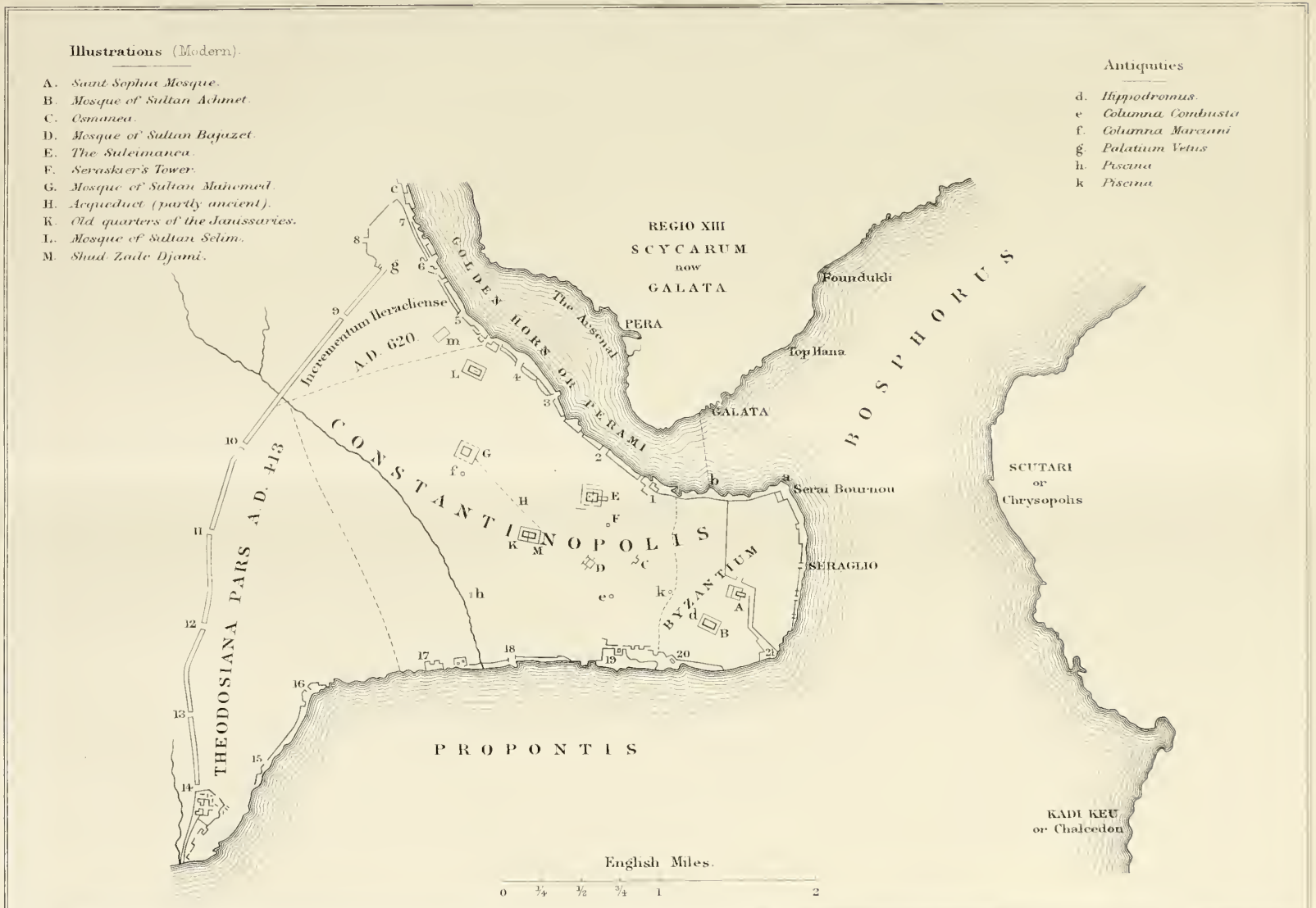
Mr. Edwin Nash, Fellow,—If, Sir, you will allow one who knows nothing about the subject to

make an observation, I will say that I think there may be in this very learned paper much more than we at once perceive. The science of numbers has no doubt an intimate connection with æsthetic proportion. Of course it has—otherwise what is proportion? It lies in numbers, and those numbers are what we particularly wish to find out, and Mr. Thomas offers to us some means of ascertaining them. I remember that Professor Cockerell in his lectures at the Royal Academy some thirty-five years ago, in speaking of proportion, said that contrast of form and size was one of the great elements of beauty: he harped very much upon this, and indeed if we look at buildings of acknowledged beauty, we can see how accurate the observation was; for it is illustrated in all those buildings which we acknowledge as models. Two and two will not do as a beautiful proportion. We want gradation of size and change of form. Mr. Cockerell did not give rules for attaining these, though he gave numerous examples in which they existed, but I think it will be found that, in designing a building where you are left free (not in the ordinary exigencies of practice), but where you are free to make a piece of architecture—say for instance in a church, and in many other buildings, if you take some multiple of a fixed dimension you will at all events find it very convenient, and very often most conducive to harmony. Take some principal and essential part of a moderate size, and use it and its multiple in the various arrangements throughout your building, both horizontally and vertically, and I think it will generally be found useful in attaining a proportion that pleases the eye, and that it is also good, acoustically, and is likewise very conformable to what may be observed in ancient buildings which have been erected, and which are considered as fine specimens. I do not know whether the motion of Professor Kerr has been seconded, but if not I shall be happy to do so. I think the theory laid before us may be worked out to a considerable extent, though the mode of doing this appears to be somewhat hazy.

Mr. Cave Thomas said,—I rise to correct an erroneous impression of Professor Kerr's; viz., that I have been reasoning upon numbers. I thought I had sufficiently explained that I only regarded numbers as symbols. I referred in the earlier portion of my paper to the false hypothesis, supposed to have been enunciated by Pythagoras, "that numbers are the principles of things,"—"entities." My theory is not founded on a Grecian dogma, but upon a scientific analysis of the five senses; this analysis showed these experiences to be fundamentally quantitative. The limits of quantitative relation were explained, and all the variations of ratio experimentally demonstrated by this mechanical contrivance. If, therefore, good architecture consist in a combination of harmonious measures, all such measures must be represented by points somewhere in this scale of ratio; and not only these but every proportion in the human figure in the universe. I only profess to have laid before this meeting an outline, not a complete science. But having set before you the limits of proportional relation, you can reason upon this scale for yourselves, if my arguments should appear incomplete or inconclusive. I thank you for the patience with which you have listened. I know, full well, it is difficult to follow a paper on an abstruse subject like the present, and which I have, perhaps, made more tedious by the method of exposition.

The Chairman,—The interesting paper just read and discussed is an excellent illustration of the wide range of subjects which are very acceptable and useful to us to hear and discuss. I quite agree with what fell from Professor Ansted, that this is a paper which requires a great deal more consideration than can be given during the reading of it. It treats of a subject which we may think over and reflect upon, and work out in our own minds, and thus it may be productive of beneficial results to all of us. I have great pleasure in conveying the thanks of the meeting to Mr. Cave Thomas for his paper.

The meeting then adjourned.



Lithog.d for the R.I.B.A. by Kell Bros London. E.C.

TOPOGRAPHY OF CONSTANTINOPLE.

Royal Institute of British Architects.

At the Ordinary General Meeting, held on Monday, 7th June, 1869, Wm. Tite, M.P., President, in the Chair, the following paper was read :—

STAMBOUL AND THE BOSPHORUS.

By the Rev. Richard Burgess, B.D., Hon. Member.

It has been my good fortune for the last quarter of a century to obtain permission from this Institute to read papers on subjects chiefly illustrative of the topography and antiquities of Rome, occasionally, however, extending beyond the record to Greece and Egypt. The "Eternal City" still continues to furnish new materials for antiquarian research and the study of the fine arts; the discoveries on the Palatine Hill, and more recently on the site of the ancient Emporium under the Aventine Hill, the stores of precious marbles, which are perhaps destined to embellish a new city, must all come in time before this Institute, but no one would venture to undertake the task who had not first visited and studied the materials on the spot; until this should be my lot, I must seek another field for my antiquarian excursions. A sight of the Sultan as he walked up the Conservatory in the Horticultural Gardens, in the summer of 1867, suggested a thought. I wondered whether his Highness had ever been educated so far as to learn that his imperial city once had seven hills and fourteen *regiones* like old Rome, and whether he had ever been told that the Seraglio which stands on the Cape Demetrius is where the original Byzantium was founded 1227 years before the birth of Mahommed. Ever since these thoughts suggested themselves to my mind the idea of reading a paper at this Institute has followed me, and at length settled itself upon the topography and old walls of Stamboul and Bosphorus. I have once in my life carefully studied, by a personal inspection, the objects I purpose to bring into view; and although it is thirty-five years since I visited Constantinople and consigned my remarks to writing, nothing is changed in that metropolis of the east which will affect the description I have to give of objects either ancient or modern. There are, however, some other reasons to be rendered why at the distance of fifteen years I recur to a subject upon which I read a paper on the 26th June, 1854, at this Institute; it was entitled "The Topography and Antiquities of Constantinople," and that paper is now among your sessional archives. On that occasion I said that I left untouched for want of space many objects of classical interest, which an excursion up the Bosphorus to the Black Sea would bring into view, and I added that I might at some time be permitted to tell the Institute what I knew of the Thracian Bosphorus, and the fortresses on both sides of it, built by French engineers, during the latter half of the last century. I have lived to redeem that pledge, but there is another circumstance in the vicissitudes of human affairs which has induced me to return to an old theme. It is confidently stated that the old walls and gates of Stamboul are soon to disappear to make way for fortifications more adapted for defence, in these days of improvement in the art of destruction; and another generation will look in vain for the mural circuit of Constantinople, as it is connected with the history of the Greek Empire, and the dominion of the Sultans.

It seemed to me desirable if those old walls are to be 'dis-established,' and if Stamboul is no longer to remain in its present form, that a record of what the city of Theodosius was should be deposited in this Institute. And, accordingly, by a special license granted to myself that I might use this occasion for winding up the old gates and walls, a diagram plan has been produced which

will enable me to make the circuit of the city with more effect, and you to follow me with more pleasure. I do not use the word Stamboul from any affectation, but because it designates the city, to which I shall limit my description. Constantinople, in its full sense, comprises three cities. Constantinople proper which is *Stamboul*, *Galata*, and its appendages on the opposite side of the canal, and Scutari on the Asian side of the Bosphorus. I have therefore given as a heading to this paper, *Stamboul and the Bosphorus*. Before I proceed up the Bosphorus, I shall make a rapid circuit of the old walls. The space enclosed by those walls is made up of the sites of four cities. 1. The ancient Byzantium, which occupied no more than the promontory or Cape Demetrius. This was the city of the East, until Constantinople swallowed it up, after 1000 years' existence. Septimus Severus besieged it in his Eastern War against his rival Niger; the Roman antiquities were all destroyed, and Byzantium lay for many years in ruins. The space added to that occupied by the original Byzantium covered by Constantine forms the ancient Constantinople, which was finished and dedicated A.B. 334. The next addition was made by Theodosius, A.D. 413, and finally the increase made by Heraclius, A.D. 620. All these portions put together, give to Stamboul the form of a harp, the base extending from the canal (Perami) across the peninsula, four miles to the Propontis. If you will put the harp-shaped city in the position in which a harpist would place his instrument for action, the head or top would represent the Seraglio point, from which I propose to begin my circuit. There were anciently three gates at this promontory, but they were closed at an early period, and so they still remain; their original names are preserved, but I need only mention one, marked b, the Porta Navalis, called by the Turks Tchifout Capoussee; it was from this gate that the chain was suspended, which shut up the harbour, and effectually prevented Mahmoud II. in 1453, from forcing an entrance into the Perami Canal. I have now to enumerate the gates which opened upon the canal, most of which remain in the original position; some of them are closed, and I shall only stop at those which possess any historical or topographical interest. 1. The Gheme Iskeli, or Fruit Gate, anciently the πυλη καρι-βιων, or Gate of Boats. The name is significative, for it is still the principal landing place from the opposite Pera. 2. Anciently the Porta Farinaria, now closed. 3. The Glazier Gate, Turkish name, Djubali C. Number 4 is the πυλη αγια or Holy Gate, so called because it was the gate that led direct to the Church of Saint Theodosia. Then came 5, the gate of the Fanar, called by the Turks Petri Capoussee: this gate led into the quarter inhabited by the Greek Fanariotes; but the district was called anciently the Regio Petri; Mahomed II. (not being able to break the great chain drawn across the harbour) transported his light ships overland from the Bosphorus (ten miles) and launched them on the canal opposite the Regio Petri. There is some historical interest attached to this gate of the Fanar. At the siege of Constantinople, 1453, this gate was bravely defended by the Grand Duke Lucas Notaras, first minister of the empire; but his valour is overcast by his abject submission to the conqueror afterwards, in order to save his life. This gate, like all the rest on the port, is a narrow and low opening in the curtain of the wall, just within it stands the house of the Greek Patriarch, and the Patriarchal Church of S. George. In continuing our circuit we arrive at the Jews quarter, called the Balat, probably a corruption of the word Palatium, for the gate No. 6, which leads into it was formerly the βασιλικη πυλη, or Royal Gate. The next, 7, and last in this direction is the Haivar Hissan, anciently called the Cynegeton. It led, no doubt, as the name imports, to the amphitheatre; but I know of no history that is attached to it.

We now come to the line of walls which run across the peninsula from the harbour to the Sea of Marmora. There were originally eighteen gates in this tract of wall. These are now reduced to seven; of these seven the Chiloporta has only preserved the remembrance of its name in this remote quarter of the city, called the Blakernes. From the position where the gate is supposed to have stood, the trans-

verse direction of the walls begin. The gate anciently named Charsias, was succeeded by the present Egri Capoussee, No. 8. Not far from this are seen, in continuing our circuit, some high walls rising above those of the city, forming part of a large building. It is commonly called the Palace of Constantine, the construction is alternately courses of stone and layers of brick, very much resembling the city walls, where the name of Theodosius so constantly appears, and as this portion of the city lies beyond the limits of the city of Constantine, I shall take upon myself, until better advised, to call these ruins the Palace of Theodosius. It is at this point where the celebrated triple line of walls begins to be seen from outside the vallum. The inner wall is the highest, and at regular intervals is strengthened and defended by lofty towers, indifferently circular, square or octagonal. The middle wall is much lower, and the the towers less, being generally circular, the third or outer wall, with a battery running along the top; serves as the defence of the ditch that runs in front of it. The most picturesque views are often combined with the historical interest which a gate or a breach in the wall gives to them; and as we proceed, the adjacent country grows into a solitude as complete as the vicinity of the walls of Rome, rendered, however, more melancholy still by the cypresses which stand over the graves of thousands. The next, in this line, No. 9, the second gate which is now opened, is called in Turkish, Edrena Kapoussee Adrianople Gate, more anciently the Poliandron. It was here where the factions of the blues and greens under Theodosius the younger, had their fierce disputes about rebuilding the walls which had been thrown down by an earthquake, A.D. 447; but the succeeding gate, No. 10, called S. Romanus, invites us to stay for a few moments, before we pass on. It was at this gate where the heat of battle was which decided the fate of Constantinople. The Mahomedan Conqueror and the Christian Emperor came here into deadly conflict, and here the last of the Constantines bravely fought and fell; his body was found after some days' search under heaps of slain, and was only recognised by the silver eagles upon his slippers. The Turks now call the gate Top Capoussee, or the Cannongate. A little further on, and we arrive at the Mevlanè Yeni Gate, No. 11, anciently called Melandisia. The top of this gate is formed by a large lintel, on which is a long Greek inscription, not legible from below. On one of the two supports is a Latin inscription of some importance in verifying the age of those fortifications. The inscription implies that the walls were made by order of the Theodosius, whose name frequently occurs in the circuit. The great Theodosius having divided the Roman Empire between his two sons, Arcadius and Honorius, the former took the East, and was the father of Theodosius II.; but only twenty years elapsed between the death of Theodosius and the accession of his grandson. The intermediate Arcadius was a mere cypher. It is not unlikely that Theodosius the younger finished what his great predecessor had planned, and he gave him the honour of the work by leaving or inscribing his name on these existing walls. We may, then assign as the period when these walls were built, the beginning of the 5th century, so that we are dealing with antiquities of 1450 years old.* The Selivri gate, No. 12, anciently the Porta Quintii, and the Kapaneu, No. 13, or Porta Attali, will bring us to the Golden Gate, No. 14, enclosed within the awful Seven Towers. In the time of the Greek Emperors, there was at this extremity of the city a fortress called Cyclobion. The Porta Aurea, or Golden Gate, bears some indication of having been a triumphal arch, on the top of it stood a statue of Theodosius. This was thrown down by an earthquake, and was replaced by a statue of victory. The Golden Gate, which perhaps meant nothing more than the triumphal gate, was overthrown by the Latin armies which attacked the city, and was rebuilt by John Cantacuzene His son destroyed it again. It was in ruins for many years, but finally Mahomet II. rebuilt it in the same place, and added several towers. These are said to be seven; but from the inaccessibility to the interior of this huge fortress, the stranger must be content with discerning but four, rising high above the

* It is a singular coincidence of time and acts that while Arcadius saw these walls rise about 420, his brother Honorius was restoring the whole circuit of the walls of Rome under the care of his General, Stilicho.

walls, nor can he give any description of the Golden Gate, except that it stands between two large square marble towers, and is just to be descried between the trees which appear to flank it. The Greeks call this fortress Heptapirghion, the Turks, Yedi Kouleler, both acknowledging the popular number seven. One of the towers was the prison for refractory ambassadors, and many victims of Turkish jealousy, we may believe, have been sacrificed in this "Bastile;" but these things belong to history rather than to topography, and I must hasten to complete our circuit, which now runs along the shore of the Propontis, from the Seven Towers to the Scraglio Point. The gates occur in the following order:—

15. Narleu Capoussee, or the Gate of Bombshells.
16. Psamatia C———, the Sand Gate.
17. Daoud Pacha C.,* anciently S. Emilian.
18. Yeni Kapousse, New Gate.
19. Koum Capousse, Shingle Gate.
20. Tchtladi, anciently Condoscalia Porta.
21. Akbour, Stable Gate, which leads to the stables of the Harem.

Then begins the enclosure of the Seraglio. The water is deep beneath these walls, and is said to have received many a victim; it reminds us of the canal beneath the prisons of Venice, which they say was used for similar deeds of darkness. In the cemented brick work near the Seraglio Gate, may be discerned the original work of Constantine. But the whole is a deformed mass of building. The towers are often built upon rows of columns inserted lengthways. Fragments of marble are seen among the ruinous heaps of building that have been destroyed by fire. Inscriptions are seen here and there inserted in the walls of houses which rise to a great height, "remnants of things that have passed away," unintelligible records of the Byzantine Empire. After this brief survey of Stamboul, I shall do no more than refer you to the diagram plan for the form and position of the two great suburbs of Constantinople. On the European side of the Bosphorus you have the Genoese city of Galata, with its old walls and towers still standing, and at two miles across from the Tophanè, you arrive at the Asiatic suburb of Scutari. Scutari, the ancient Chrysopolis, is said to be as large and populous as Smyrna; it is chiefly remarkable for its forest of cypresses, extending for some miles over the heights, which were once covered with the crusading armies of Godfrey de Bouillon. The celebrated view from the top of Mount Bourgaloue will amply repay the fatigue of pushing your way through the port, and toiling through the crowds of visitors to the Mussulman graves.

The second part of this paper is now to be occupied with the description of a voyage up the Bosphorus, and I purpose to leave some remarks I have in store upon the existing antiquities of Constantinople until I return from the Euxine Sea. The great stream of the Bosphorus, after flowing for a distance of twenty miles from the Black Sea, breaks with all its force against the Seraglio point, and distributes its waters into the Perami Canal and the Propontis. We embark at Tophanè in a light caique, and proceeding close to the European shore, soon pass Foundoukli, so called from a palace built by a wealthy citizen, under Mahomet IV., 1649-1687. Dolma Batchè, and its towering mosque arrest the eye. Near it stands the Kiosk of the Melons, attached to a favourite residence of Sultan Selim III. Below this was the ancient port of the Rhodians. Next succeeds the village Besiktash, so called from Hadgee Beshik, who originally formed the Janissaries into the Prætorian Guards of the Sultans. The village of Ortakeu is passed, and then succeeds the promontory of Defterdar, anciently called Clidion

There are seven acute angles or elbows in the Channel of the Bosphorus occurring between

* Capoussee or Kapoussee is the Turkish word for Gate.

Dolmabatche and the Black Sea; these give rise to as many different currents; the Defterdar promontory terminates the first bend of the canal, and in ascending we enter the great current, Μεγαρευμά. Gliding past the villages of Kourou Tzchesme and Ortakeū, we reach the promontory of Akindi, between this and Kislar Bournon, the ancient "Hermæum promontorium," the rapidity of the stream and collision of the waters have caused the Turks to name the current Sheitan Akendi, or the Devil's Race. Gyllius says that crabs are unable to advance against it, and are obliged to make their way over the rock. More anciently still, Dionysius of Byzantium bore witness to the force of this current. I can bear my testimony also, for I remember it was necessary that my light caique should be towed through the dancing waters until the retiring shore allowed the stream to settle itself under the heights of Bebek. Near the promontory of Kislar stands the Roumeli Hissar, or Castle of Europe, built by Mahomet II. in the middle of the fifteenth century; from a spot a little above the gate of this castle (called by the Greeks Neocastrum) to a place called Ciconium on the opposite shore is a distance of three-quarters of a mile only; it was over this strait that Darius threw his bridge, and from the promontory Kislar contemplated the passage of his army, and across this narrowest part of the Thracian Bosphorus the Crusaders passed from Europe to Asia. Directly opposite stands the Anatoli Hissar, or Castle of Asia, of about the same date as the one corresponding. The boatmen account this half way to Therapia. The current again beats strong against the quay of Balti Liman; here is the Portus Mulierum of Pliny. Why the Roman women should have had a harbour for themselves I cannot say. The nearest resemblance we have to it on our Bosphorus I take to be Billingsgate. But how different the scenery, for at the women's harbour it increases in beauty on both sides the Bosphorus. We come next to a large creek, anciently called the Gulf of Leostheneos, now Stenia or Stene. This is an excellent port, the hills rising above it encloses its bay in a perfect triangle; a river runs in at the vertex. There was a twenty-gun frigate lying at peace when I saw it. Neochori is a large village running towards the Yenikeu Bournou; this point was called Camarodes, from the arbutus groves near it. It was here where the Byzantines vanquished the General of Philip of Macedon. Moving along to Kalendar, the handsome buildings which line the shore of Buykdere burst upon the enchanting view, and the expanding waters form a bay called by the ancients Pharmacia, from Medea's potions, or poisons, but by the Greek Therapia. Gyllius conjectures the change of names was to avoid the evil omen which such a name as Poisons would convey. The "nominis umbra" of Medea hovers around these shores as we ascend towards the Euxine. Byron has given the reins to his playful muse when he visited the Bosphorus in 1810, and scrambled up the Cyanæan Symplegades at as great a risk, he says, as ever the Argonauts escaped in their hoy; and when on the summit, he wrote that witty paraphrase from the opening lines of the Nurse's Dole on the Medea of Euripides, which I will give you, by merely changing one word, a word which should never be used in a polite audience, except in quoting Milton.

Oh! how I wish that an Embargo
Had kept in Port the good ship Argo:
Who still unlaunch'd from Grecian docks,
Had never pass'd the Azure rocks;
But now I fear her trip will be a
Sorry business for my Miss Medea.

Therapia, a village of rather mean habitations scattered along the sides of a triangular-shaped bay, is not very attractive. Rounding the Cape Limi the sea opens into a deep bay, the ancient Bathycolpos, but now the gulph of Buykdere. It is on this bay or gulph where the ambassadors of the civilized nations have chosen to reside. The European shore of the Bosphorus here exhibits a type of civilization;

the houses of the Ambassadors, and the habitations of the residents in general have an air of cleanliness not easily to be found in the land of Mahommedanism. The mountains which almost overhang the palaces on the deep bay are richly clothed with vines and luxuriant foliage, and when seen in the early morning sun tempt the traveller to linger; but a long day is before him, if he means to explore the entrance into the Black Sea, and return by the Asia shore of the Bosphorus, and cross in time to sleep at Therapia or Buykdere.

The first bay after leaving Buykdere is Sangeri, anciently called Selectrinum. This bay is enclosed by two promontories, Mega Bournou, anciently called Simas, and the still more conspicuous cape, called by Dionysius Milton or Amilton. The village of Yennichala is seen on the shore on turning the Mega Bournou. The battery which stands on the further promontory was constructed by the Genevan engineer Monnier in 1795. It points its guns close upon the water. Near the river Chrysorrhoas, which flows through the neighbouring valley, stands the Roumeli Kavali, or European Castle; it was built by the Genoese, and answers to the old castle Anatoli Kavak on the opposite shore. Near the European Castle there is a battery, formed by Toussaint in 1783, and enlarged by Monnier in 1794. In advancing up the Bosphorus the extensive ruins of those fortresses are seen on the heights. From Xeras we have a rock-bound coast, growing in altitude, but offering nothing of interest until we arrive at Buyuk Liman, or the Great Harbour, one hour from Buykdere. Here is a landing place; it was anciently the port of the Ephesians, but now it has no harbour. It is defended by a small battery constructed by Lafitte and Monnier. Here the river Karatze enters, which is also the name of the promontory. A little further is a fort built by De Tott in 1773; here was anciently the port of the Lycians. Crossing this port, we come to the promontory Papas Bournou, or the promontory of the Priest; and here the European Fanar on the Berium promontory (lighthouse) overlooks the entrance into the Euxine Sea, and the Cyanæan rocks of poetic fame. On the shore are those numerous caves and hollow rocks which are said to have been the retreats of the Thracian robbers; they have all the marks of having been the hiding places of a lawless fraternity lying in wait to disendow the pockets of the more respectable inhabitants. The promontory called the Papas, or the Priest, was a shelter and protection from which they could always receive warning at the approach of the established authorities. The Cyanæan Islands, or Symplegades, are described by Strabo as two little isles at the mouth of the Euxine, one close to Europe, the other to Asia, separated from each other by twenty stadia, say two and a half miles; they are in fact each joined to the main land by a kind of isthmus, the rocks rise out of the waters in five distinct heads; they are not so high but that the spray of a roaring sea may almost reach the top, the waves break against them with a violent noise and render the passage very dangerous. They are difficult of access, from the loose shelving surface and abrupt steepness of the path seldom trod. Like our illustrious poet, I scrambled up, and stood on the top of the highest of them; and there I saw an altar, commonly called Pompey's Pillar, but in reality it is an altar in honour of Augustus, for old travellers read upon it this inscription, now defaced, CAESARI. AVGVSTO. F. CL. ARMIDIVS. L. F. CLA. FRONTO. It seems originally to have been the "frustum" of a column, and when turned to the account of a dedicatory altar had rams' heads and festoons added, probably at the dedication. Numerous travellers, more ambitious of distinction than myself, have scratched their names all over it, and helped the corroding foam to efface the old inscription. There is a wild look upon those waters of the Black Sea, which open wider their waste as you continue along the coast to the Osania promontory. In the far distance on land, you see the azure hills of old Thrace, and the sullen coast, as far as the eye and telescope will carry you. Turning from the wild region, both of sea and land, you steer due E. towards Asia, again approaching the European Azure Rocks to which the fort built by Toussaint seems to be attached. Here the waters rush through the passage which at some period they have made

for themselves, as if they were resolved that Asia and Europe should not be separated by a barrier they could so easily remove. The Cyanæan isles on the Asian coast lie beyond the town of Riva, with its port and river. It is here where we must look for the rock from which Jason took his stone anchor, and where the name of Medea is still known among the inhabitants. The promontory on which the Fanar of Asia (Anatoli Fanaraki) stands, is the corresponding "jaw" of the mouth of the Bosphorus (Ancyreum), which it is not difficult to ascend. The sun was hot, but suddenly the waves began to whiten, and the wind rolled over the water darkly, giving in a moment a faint idea of the roughness of the Black Sea, and its sudden changes, answering well enough the description of our poet in his merry mood—

> There's not a sea the passenger e'er pukes in
> Turns up more dangerous breakers than the Euxine.

We now return by the Asiatic shore, passing the promontory Pilaf, on which is the fort Porias-Liman, built by De Tott in 1773. Next succeeds the promontory Phil Bournou,—Cape Elephant,—anciently the Corakion, from the number of crows that hovered about it; here is a battery, also by De Tott. This part is connected with the old Gulph Pantichium, a fine expanding bay, now called Keteli Liman; a ruined fortress of the Genoese stands above it at the south-west end. The coast now falls into smooth hills, and we are near the country which afforded a retreat for Belisarius: for here was the Panti-chium shore, but another place of the same name on the shores of Chalcedonia contends for "the glory and the shame." From the Asia castle to the Roumeli Kavaki is not more than a mile and a quarter across. On the Asia side stood the city of Hieron and the Temple of Jupiter Urius; Herodotus, Polybius, and, I think, Strabo, all allude to this celebrated temple; the present name of the village, Jero, preserves the memory of this classical region. It was here that the Argonauts, 1267 B.C., offered sacrifices on their return from Colchis, and from hence Darius took his survey of the Euxine. The Byzantine emperors secured the narrow passage of the Bosphorus here; and when the Genoese, in later times, erected the two forts now in ruins on the respective shores, they held the keys of the strait. The French engineers who assisted the Turks in the Russian war of the last century, applied their genius to secure the important passage, which we may call the Dardanelles of the Thracian Bosphorus. Here, at the Anatoli Kavak, is the last of the memorials of those French engineers, who dedicated a portion of their lives and much of their talents to the service of a power which knew but little how to appreciate or suitably reward their services; it seems as if their ghosts have now been wandering along these shores for nearly one hundred years, and no one to throw a handful of earth upon their unburied heads. Lafitte, after serving in the Turkish war with much honour, and having struggled against insuperable difficulties, was forgotten both by friend and foe; he ended his days at Perpignan. Le Chevalier sought in vain for his grave, or any remembrance of his name, his *nominis umbra* only flutters on the foreign shore of the Black Sea.

Immediately below Jeron is the ancient Argyronium, which forms one of the declivities of the Giant Mountain; but veering round the point, anciently Cape Bithynia, the Magias promontory, with its castle, appear at the extremity of the bay. From the village of Jero to the top of the mountain (seeing the ruins of the Genoese fortress) requires an hour well spent. From the Temple of Jupiter Urius the ancients seem to have measured the 120 stadia to Chalcedon. Continuing along the shore, gliding past Omegeri, we arrive at the Selvi-Bournou, or Cape Cypress, directly opposite to Therapia. Behind it lies a beautiful valley, watered by two streams; here Sultan Selim III. availed himself of the skill of an Englishman, who had run away from home and turned Turk, to construct a paper mill. Passing the promontory, anciently Glarium, now Kandlige Bournon, we find at Beieosbay a favourite kiosk of Sultan Soliman, where the giant Amycus, they say, pastured his herds. The castle

of Asia now responds to the one on the Europe shore. Joksu, in the valley of sweet waters, is the largest stream that flows into the Bosphorus; on its banks are the most splendid kiosks, and it is to this source of daily joy that the Moslems resort, especially the Turkish women, where every sort of equipage figures, as they do in June on the borders of the Serpentine. The village near is Candele, "the supposed site of the Bithynian Necropolis;" the rest of the Asiatic shore from the Candele promontory to Scutari, with five villages and numerous habitations in groups, have no great interest attached to them. The inhabitants of the Bosphorus, as we have now traced its outlines, dwell in twenty-four villages or small towns—a great number of villas and detached dwellings—but the whole population so located should not be taken to exceed 70,000. The views gained from the promontories and mountains are so varied and extensive,—the bends of the great stream and the different directions given to the course of the caique bring the same objects into such a variety of positions,—that the stranger is overwhelmed with the magnitude of the landscape; but the inhabitants are not thickly spread, and the mere view often deceives the imagination. The view the most celebrated is thought to be that from the Giant's Mountain, which I will invite you for a moment to re-ascend with me, that we may bid farewell to the Bosphorus and the Euxine. The Giant's Grave, or the Tomb of Amycus, has passed through at least three editions since the Argonauts were kindly received by this great king of the Byrbyces; it was afterwards called the bed of Hercules, and now it is registered in the Turkish Kalendar as the Giant's Grave. It is a raised flower-bed, fifty feet in length, and hardly twelve in width; there is a border of stone all round, and at each end a sculptured turban; ex votos, as in a Christian country, are suspended on the border, not valuable for their material, but pieces of dirty rags, in honour of the parties having recovered from fever. Close by the grave is the Tekeh, or Dervish Chapel; the holy man looks closely after the backshish, and, when he has satisfied himself, proceeds to beg for his child and his assistant apart. It is not altogether to worship at the Giant's Tomb that the crowds of holiday makers ascend this height on the Asiatic shore. They enjoy the wide and varied prospects which are to be viewed in all directions; they see the Gulf of Buykdere on the west, with its habitations lining the shore; towards the south, the Bosphorus, running down as far as the Asiatic Palace; towards the north and east, the eye wanders up the canal until it reaches the wide waters, and attests the beauty and accuracy of the poet's description:—

"The wind swept down the Euxine, and the wave
Broke foaming o'er the blue Symplegades.
'Tis a grand sight from off the Giant's Grave
To watch the progress of those rolling seas
Between the Bosphorus, as they lash and lave
Europe and Asia, you being quite at ease."

But now the day is calm and bright, and here you have the scene drawn mild:—

"The European with the Asian shore
Sprinkled with palaces: the ocean stream
Here and there studded with a seventy-four;
Sophia's cupola, with golden gleam;
The cypress groves; Olympus, high and hoar;
The twelve isles, and the more than I could dream,
Far less describe, present the very view
Which charmed the charming Mary Montague."

But farewell, Bosphorus! at the Giant's Grave we part!

I cannot pass by another grave—which is a more affecting reality at this moment—without throwing a handful of flowers upon its borders. It is a grave just prepared for receiving the remains of one who described the Bosphorus before me, and whose descriptions will remain when my short-lived sketches are forgotten. He once gave me, at Rome, a word of advice as to the form into which I ought to throw my antiquities of Rome; and I cannot forget the delight with which I always read his illustrations of the brilliant pilgrimage of Childe Harold. We know him as the classical companion in travel of Lord Byron, under the name of Hobhouse; in prosaic life, he shines as Lord Broughton.

Returning for a moment to Stamboul, I cannot trespass on your patience beyond a mere reference to the diagram plan for the sites of the seven imperial mosques and other modern structures, as marked by the capital letters from A to M. The seven great mosques may serve to point out the positions of the seven hills, which on a former occasion I traced out, and the topographical survey may be found among your Sessional Papers of 1854. On the same diagram will be found references, by small letters, from *a* to *k*, to the position of the remaining objects of antiquity; these may be summed up in the Hippodrome, two columns, two subterranean reservoirs, and an old palace; but neither do I intend to detain you with any lengthy remarks upon these antiquities, which have been described by so many travellers, and seen in later times by so many of our native warriors. The Hippodrome, called by the Turks Atmeidan, or the Place of Horses, is the most interesting, not only on account of its association with some of the important events and names in Byzantine history, but far more for the most genuine relics of ancient times. The Hippodrome existed as a circus of the old Byzantium, having been begun by Septimus Severus, A.D. 195–8. The space which the arena occupied is still open, and there remains the spina, on which stand in their original places some of the monuments symbolical of the race, as in all the Roman Circuses. I pass over them all, except the pillar of brass, formed by the three serpents twisted into one. Gibbon cites both Pagan and Christian historians in favour of the authenticity of this relic of antiquity. "The triple heads," he says, "had once supported the golden tripod which, after the defeat of Xerxes, was consecrated in the Temple of Delphi by the victorious Greeks." The proofs are abundant (Gibbon, chap. xvii., note 48) that the ornaments in the temple of Delphi were removed by order of Constantine to his new city; and three ecclesiastical historians, as well as one pagan (Zosimus), particularly mention this serpentine pillar; and there is no trace, and no reason to suppose that it has ever been removed from its place, where it was erected by the Roman Emperor. Gibbon, on the authority of Thevenot, says that Mahomet II., the conqueror of the last of the Cæsars, broke the lower jaw of the serpent with his battle-axe. Hobhouse (Lord Broughton) doubts this fact, because subsequent travellers who saw the relic are silent upon it. I think the Turkish conqueror may have some credit for not being capable of such a useless and wanton act of barbarism. When standing in the desolate mansion of the one hundred successors of the great Constantine, he had feeling enough in that hour of victory to repeat the elegant distich of Persian poetry: "The spider has wove his web in the imperial palace, and the owl hath sung her watch-song in the towers of Afrasaib."—(Gibbon, chap. lxviii.) But then the indignity with which the Turks treat any object of art, however exquisite, renders them unworthy of the possession of this or any other relic of antiquity; and if the least effort had been made during the period of the Crimean war, the serpentine pillar of twisted serpents might now have been in the British Museum. As a supplement to the remarks I made upon the Hippodrome fifteen years ago, I would fain adjust the measurement, as compared with the Circus Maximus at Rome. There is only one way of accounting for the discrepancies, and that is, that no European traveller has ventured to measure the length by line and rule, but only by pacing it. Gibbon says Tournefort found the length to be 400 paces, and if by that he meant geographical paces of 5 feet each, it would be 300 toises. I always understood a toise to be 6 feet, which would produce 1800 feet; but 400 geometrical paces at 5 feet each would be 2000 feet.

This is not of much importance; but it is surprising to find the most accurate of historians adding, this (300 toises) is more by 40 toises or 240 feet than the great Circus at Rome. Dionysius gives the length of the Circus Maximus at 2178½ feet (3½ stadia), and the width 4 plethra, or 240 feet. Pliny gives the length at 1875 and the width at 625. Suppose we make a compromise between the Greek and Latin authors, and let the Circus Maximum stand at 2000 feet, a length which sufficiently coincides with the site of the great Circus, as it may now be traced by existing vestiges in the valley between the Aventine and Palatine hills. On measuring the Atmeidan, or Hippodrome, at Constantinople, I was reduced to the pacing system:—

From the stone pyramid to the twisted column I made	47	
To the obelisk	22	
To a fragment of a granite column	196	
From thence to opposite the fountain belonging to the Mosque, where the ground begins to fall away	69	
Behind the stone pyramid, to complete the whole length... ...	65	
Total	399	paces, say 400

and this squares with Tournefort, if his paces were like mine, *au naturel;* now I think it is a very fair conclusion for an antiquary to draw from these facts that these two measurements, taken at a distance of two centuries, so nearly coinciding, Tournefort and myself must have been about the same size and corpulence, and instead of taking the historian's paces at five feet, I should be inclined to take them at what I estimated my own. Paces are strides of uncertain dimensions. I recollect having paced the ground twice over with great care, and I was careful not to estimate my strides at a gigantic length, I put them down at 2½ ft.; I made the length of the Hippodrome 1000 ft., that is, one half the length of the Circus Maximus; and if any of my intelligent audience should be inclined to doubt of the closeness of my argument, he has no other remedy than to take a summer's excursion to Constantinople, and make the measurement for himself. I have already stated that the objects of antiquity in this Metropolis of the East are few, but these are well authenticated and admit of no controversy; there were several triumphal columns in Constantinople as well as in Rome: there was one in honour of Theodosius which stood on the seventh hill, but is now no longer existing. But near the Avret Bazaar, west of the acqueducts, there remains a pedestal sustaining the "torus" of a column base; this is supposed to be the triumphal pillar of Arcadius; about a quarter of a mile from Shah Zade Djami, or mosque of Sultan's son, stands a column called by the Turks "Kistash, or the Virgin's Stone;" it has suffered much injury from fire. This triumphal column was erected by Tatian to Marcian, who became Emperor in the year 450; it is a curious example of what Architects then thought of proportion,—a ponderous weight of marble placed on a tall, lanky shaft, which was, of course, surmounted by a statue of the Emperor; there are winged figures at the angles, three Christian monograms on the pedestal, and below the inscription a winged female figure, which might have been taken for an angel, only she is reaching her hand, now mutilated, towards a Centaur; there is much that is striking in this caprice of the fifth century (a drawing of it may be seen in "Wheeler"); the greatest resemblance I have seen to it in the nineteenth century is the memorial column of the Immaculate Conception, in the Piazza d'Espagna at Rome; and the pillar which stands in the Broad Sanctuary at Westminster. The next monument of this kind is called "The Burnt Pillar," and it is that, after the twisted column, which has most attracted the notice of enquiring travellers: it is of porphyry; the shaft is composed of several blocks, and the joinings are concealed by garlands; it is bound in many places by iron girdles, to keep together the calcinated pieces, nearly dissolved by the fire; it stands upon the second hill, and is said to have been brought from

Rome; it was probably struck by lightning in the reign of Alexius Comnenus, A.D. 1081, and one of his successors rudely repaired and disfigured the upper part. This restorer, as an inscription tells us, was Manuel Comnenus, A.D. 1143. Pocock observes that Arius died near this column, A.D. 337.

The Aequeduct of Valens, A.D. 370, is best seen from near the At Bazaar, or Horse Market; the ancient construction is easily distinguished from the more modern patchwork,—the two rows of arches give it a lofty appearance, and the repairs of the Sultan a heavy one; but after having seen the Marcian Aequeduct in the Campagna, who would linger for a moment among the shapeless arches of the conduit of Valens?

Near the Burnt Pillar are the dry subterranean cisterns, which were used, when I saw them, for spinning silk and making ropes. The first has five divisions supported by thirty-two granite columns of perfect regularity, but I had rather adopt the description of these reservoirs which I saw in a letter in *The Times* some months ago, referring to the interesting discoveries of Lieut. Warren at Jerusalem. Mr. Henry Conybeare considers that the vaulted roof supported by columns which Lieut. Warren, from its arched construction, could hardly believe was built merely for a tank, is really nothing but an underground cistern, and he says, "The most splendid examples of these Piscina, out of India, are the cisterns of Bin-Binderell, or of the One Thousand and One Columns, and that of the Yèrèbatan Serai, or Subterannean Palace, at Constantinople. Of these the first is now dry, and used as a silk factory; it occupies an area of 20,000 square feet, and is capable of containing 1,237,000 cubic feet of water, a quantity sufficient to supply the population of Constantinople for fifteen days. The Yèrébatan Serai still remains a cistern of water, its vaulted roof is supported by 336 marble columns, all with exquisitely sculptured Corinthian capitals, and some of them with sculptured shafts. In both the construction of the roof is the same as in Lieut. Warren's tank, viz.: a groined vault with rectangular transverse ribs, and though unquestionably built as cisterns only, they greatly exceed the Jerusalem example in scale and magnificence."

I am fully aware that I have laid myself open to some sharp criticism by this daring attempt to dash in among your Sessional Papers without any definite object; the man who first attempted to enter upon the Euxine Sea in his frail bark is said to have had oak and triple brass on his breast, but whatever Jason, who went to fetch the golden fleece, might have had about him in the way of courage, I think I can beat him in the brass, for without a good supply of that material I could never have dared to take you on a new Argonautic expedition. I may have been most imperfectly describing what subsequent observers in the course of thirty years and more have either given more accurately, or altogether exploded, but Constantinople and its environs are unlike Paris; the one is ever running, while the Capital of the East stands still; but if it be true that the Crescent is now about to follow the Cross and level down the bulwarks of a 1000 years, if it be true that the Muezzin will soon cease to call the hour of prayer from the established minarets, then what I have done to-night will leave a record in the Institute of what things were when Mahmoud II. made his reformation in the fifteenth century, and my rough sketch will show the way the Bosphorus did run when Solyman the Magnificent was King.

THE PRESIDENT said he was sure that he only echoed the feelings of every one present in expressing his extreme obligation to their excellent and learned friend for the very able and entertaining communication with which he had favored them. He had never had the pleasure of seeing Constantinople, and he was, therefore, the more obliged to those who took the trouble to explain and bring back to our recollection the beautiful ruins and remains of the past in that wonderful city. Those extraordinary water-tanks which Mr. Burgess described reminded him of the similar constructions found on the promontory of Misenum,

near Naples, where the elder Pliny embarked to see the eruption of Mount Vesuvius, and was killed by that eruption. It was said that at Misenum the Roman fleets were victualled and watered; and on that promontory there was an enormous construction, called now the Cente Camarelle, which was of the same wonderful extent and remarkable character, such as his friend had described, and recently referred to by *The Times* correspondent at Constantinople. It was constructed, not with polished marble columns, but with piers and arches of beautiful brickwork. It was lighted by holes broken in the roof, and one might walk with tolerable comfort through it; but the most curious fact was, that up to a certain height of the piers (he supposed some eight or ten feet) it looked exactly as if those brick columns had been most carefully plastered, and he thought it might have been done to prevent the water corroding the brickwork and mortar. It was a coating of one-tenth of an inch of uniform thickness, and very smooth. He broke a piece off and brought it home, and it remained in his cabinet until about six months ago, when the question of the purity of the water supply of London came under discussion; and one of the gentlemen employed by the Metropolitan Board of Works having called on him, examined this piece of incrustation or coating on the piers, and offered to take it home and analyze it. He did so, and afterwards informed him (the President) that it was merely a deposit of carbonate of lime, very like the stalactites found in our caves. The uniformity of polish, and the large extent of the deposit, showed the great length of time which the water remained in those caverns, for it was a perfectly indurated and smooth coating, of the thickness he had stated. It showed two things—viz. that the Romans must have taken very great care of their sailors, and abundantly supplied them with the means of preserving their health, and that they must have taken enormous pains, and spent large sums of money to that end. We were not so careful, for, even in our own day, the water of ships of war was carried in barrels, and, later, in rude iron tanks or cylinders, into which the water was pumped. After a time the water—of the Thames, at least—putrified, and then became sweet again, and so was used on the voyage. But modern science had done more than we then dreamt of, and the President believed that now, by a simple process, fresh water was produced by the evaporation of the steam of sea water. He hoped his friend, Professor Donaldson, who, he believed, had been very recently in the locality described this evening, would favour the meeting with a few observations, as this was a subject to which he knew the Professor had given a good deal of attention.

Professor Donaldson, P.P., said there were so few objects of architectural or antiquarian interest in Constantinople, that one could hardly offer any observations upon the paper. Constantinople had been the victim of so many assaults, so many burnings, so many earthquakes,—in fact, both natural and artificial circumstances had tended to destroy the city, and left few of the remains perfect. The few which remained—to which his reverend friend had called their attention—were those of reparations from time to time of imperfect forms of the Middle ages. With respect to the Golden Gate, so called (the Porta Aurea), he believed it was in Constantinople, as in other places of the east, that that name was given, on account of the yellow colour which the limestone assumed, from the action of the sun and the weather upon it. He had never been so fortunate as to visit Constantinople, though he had frequently been within a few days' journey of it. It was a city full of beauty from without, and full of dirt within; and if travellers wished to admire it, they ought not to go inside the walls. It was certain there was a good deal of interest in the mosques built by the Christians and covered over and disfigured by the Mahommedans. Under the plaster of the domes were found the mosaics, which the Turks hid out of sight, as they did not admit of decoration in their sacred edifices. Even the Mosque of Omar, at Jerusalem, might now be inspected with a degree of liberty; and, no doubt, in a few years Christians would be permitted to go freely into the mosques of Constantinople, and examine them at their leisure.

He entirely concurred with the President that their best thanks were due to Mr. Burgess for his interesting information.

Mr. E. I'Anson, Vice-President, begged to add his humble tribute to that which had already been given for the valuable paper which Mr. Burgess had read. It was pleasant to travel over again, in so agreeable a manner, the scenes which he himself had visited more than thirty years ago. He recollected all the localities of the Bosphorus and the entrance to the Black Sea, as described by Mr. Burgess. The objects of architectural interest in Constantinople, prior to its occupation by the Mahommedans, were few, and those great cisterns referred to were really the only objects of ancient architecture which struck him as being of remarkable interest. The other objects described by Mr. Burgess had interest to the antiquarian and archæologist, but to the architect scarcely any. But after the period of these ancient monuments, there did come a time when the Turks did not disfigure the buildings they found, but left behind some beautiful monuments of art, and Constantinople possessed a large collection of interesting works from the fifteenth to the seventeenth centuries. Some of the Byzantine remains contain a great deal of Italian ornamentation adapted to Byzantine architecture, as seen in some very exquisite examples, particularly in the fountains. Constantinople for a time exercised a large influence upon the architecture of the eastern part of Europe, especially Russia, which he had particularly observed in the churches of Moscow. Both the mosques and fountains of Constantinople were works of remarkable beauty. With reference to the great reservoirs in the Bay of Baiæ, referred to by the President, that country was one of great volcanic activity, and within a short distance of those fountains was the Temple of Jupiter Serapis, which gave remarkable evidences of great changes of level, and it was possible the same causes may have affected this cistern. At all events, the craters of this district were so charged with lime and carbonic acid gas that they deposited the former substance in great quantities, and large tufaceous rocks were formed of that material. His principal object, however, in rising was to draw attention to the works of art in Constantinople of later date than those to which the learned author of the paper had alluded to.

The President said Mr. I'Anson had not referred to the modern European churches in Constantinople. He saw a gentleman present, Mr. W. Burges, who was connected with the Memorial Church in that city, and perhaps he could give them some information on that point.

Mr. Burges said he had seen but few modern churches in Constantinople, and they were generally surrounded with very high walls. There was nothing particular in them; and he certainly agreed with Mr. I'Anson that the architecture of the sixteenth to the eighteenth century, as existing in that city, was infinitely better than any either in Paris or in London.

The vote of thanks to Mr. Burgess was carried by acclamation, and the meeting then adjourned.

Royal Institute of British Architects.

At the Closing General Meeting, held on Monday, 21st June, 1869, W. Tite, M.P., President, in the Chair, the following Papers were read:—

ON THE TOMB OF TI. C. VITALIS, IN THE VILLA VOLKONSKI, ROME.

By Professor Donaldson, P.P., Honorary Secretary, For. Corr.

Extensive as have been the excavations in the city of Rome itself and in the neighbourhood, and important as have been the antiquities brought to light, so great has been the accumulation of the soil since the downfall of the empire, and so comparatively limited the researches, that there is still a vast field yet unturned by the spade of the explorer, and every-day experience proves, that doubtless treasures of antique art still lie hid, to be revealed as the excavator pursues his useful labours. Among the ancient constructions brought to light within the last few years, my attention was rivetted, when I was at Rome in February last, by the inscription on a tomb, which has been cleared close to the line of the Neronian aqueduct in the Villa Volkonski, behind the Scala Santa, near the Basilica of S. Giovanni Laterano. This inscription proved it to be the tomb of T. C. Vitalis, *Architect.* I have felt, therefore, it would be interesting to the members of the Institute, for various reasons; and, remarkable to say, it has not been yet published by the antiquaries or architects of Rome. Its arrangement, its construction give it special claims to our attention; but more particularly its dedication as the family tomb of an ancient Roman Architect.

The line of the Neronian aqueduct enters Rome near the Porta Maggiore, ancient Prænestina, and, at a short distance within the walls, it makes a short bend towards the Scala Santa, near S. John the Lateran; afterwards pursuing its course by the Cœlian Hill to the Palatine Hill. On the whole of this line it even now rises to a considerable height above the surface of the ground, and especially in the valley between the Cœlian and Palatine Hills. In the interval between the bend, already alluded to, near the Porta Maggiore and S. John the Lateran, a vast accumulation of soil has taken place, as appears from the level of the old paved Roman road, near the tomb, and which at this point is 17 ft. 4 in. below the sloping surface of the hill.

The tomb itself is a square mass 15 feet 7 inches in front, and about 18 or 19 feet from front to rear. The floor of its lowermost chamber is 14 feet below the level of the old paved existing Roman road; but as the step of the door or entrance to the tomb is now 3 feet 2 inches below the ancient roadway, it appears probable that the level of the more ancient road must have been originally five or six feet lower than it is at present. The tomb consists of three chambers or storeys in height, with a staircase communicating from one up to the other. The doorway entered a few feet below the floor of the middle chamber, to which there are some four or five steps from the sill to the doorway up to it. The thickness of the front wall of the two lower chambers is 2 feet 3 inches, that of the side walls about 2 feet; but the walls of the uppermost chamber are reduced to 1 foot 7 inches in thickness. The body of the construction of the walls is of concrete faced on the inside with opus reticulatum, the wedge-like bricks of which are $2\frac{3}{4}$ inches square on the face, and 2 inches square at the end, by $4\frac{1}{2}$ inches long

The outside facing of the two lower chambers is of thin bricks of different thickness; but seven courses of which rise $11\frac{5}{8}$ inches, and vary in length from 8 to 16 inches. The uppermost chamber has quoins on the outside in header and stretcher courses, rising five courses of bricks in height, and the stretcher 18 inches long; here the general face of the centre is of opus reticulatum. It will be observed that the opening of the doorway does not diminish in the height, and is 2 feet 2 or 3 inches from the angle. The height of the aperture is 5 feet 5 inches by 2 feet $3\frac{1}{2}$ inches wide. The sill, jambs and lintel are of Travertine stone, surmounted by a moulded cornice of terra cotta two courses high. In the centre of the front is a marble slab 4 feet long by 2 feet 2 inches high, having mouldings all round, and it is inserted in a moulded terra cotta margin or frame $3\frac{1}{2}$ inches wide, sunk slightly from the face of the brickwork. It contains the following inscription:—

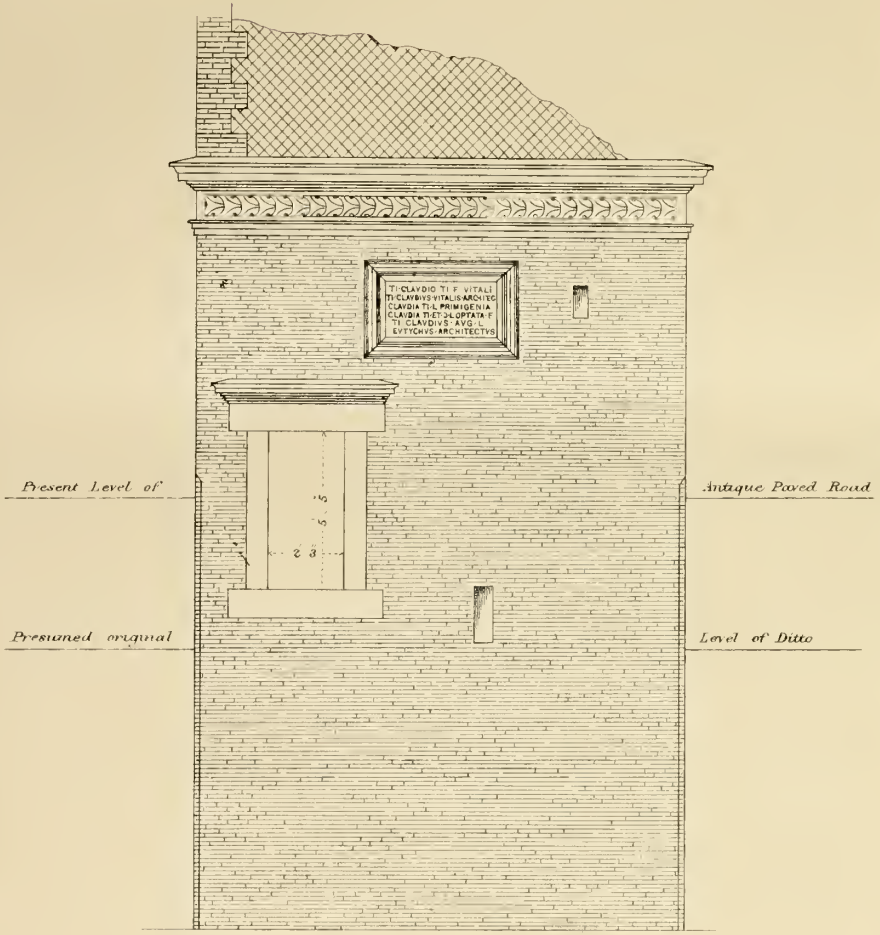
TI · CLAVDIO · TI · F · VITALI	To Titus Claudius Vitalis Son of Titus
TI · CLAVDIVS · VITALIS · ARCHITECTVS	Titus Claudius Vitalis Architect
CLAVDIA · TI · L · PRIMIGENIA	Claudia Eldest Freedwoman of Titus
CLAVDIA · TI · ET · O · L · OPTATA · F	Claudia and Claudia beloved Freedwoman of Titus erected
TI · CLAVDIVS · AVG · L	Titus Claudius Augustus Freedman
EVTYCHVS ARCHITECTVS	Eutychus Architect

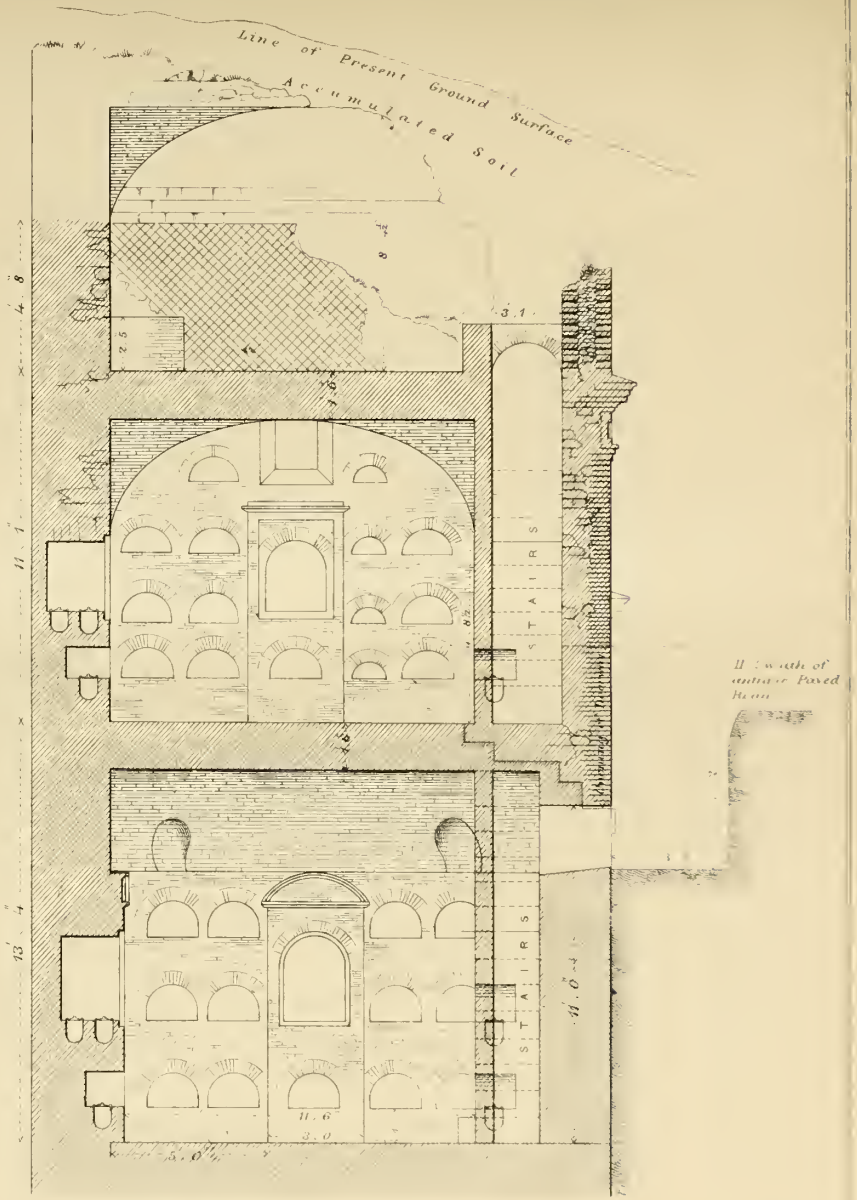
The entablature is 2 feet 6 inches high, consisting wholly of terra cotta, and has regular architrave frieze and cornice. The frieze has a sunk panel, enriched with a very effective ornamental pattern formed of tiles of two colours, and is of very graceful and unusual design. The roof and greater portion of the walls being destroyed, it is impossible to judge of the mode in which the upper part of the monument had been completed; but we may presume that it had an upper, but of course less high, storey or attic, with the rusticated angles and reticulated centre, surmounted by a cornice of less dimensions than the lower one, and probably crowned by a pediment.

We will now consider the interior. The ceiling of each chamber is of concrete or rubble work vaulted, the two uppermost ones being groined. The floors are laid with mosaics in white and black tesseræ. The plan of the mosaic of the middle chamber is given on plate 3, and the general arrangement of the floor of the uppermost chamber is indicated on the plan; the mosaic floor of the lowermost chamber is quite destroyed: the centre of the compartment of the middle chamber represents the walls and turrets of a fortified city. The faces of the walls and ceilings of the chambers were plastered and coloured in distemper: the damp, however, has destroyed the paintings formerly thereon, so that only a few faint traces of colour of distemper are perceptible. In order to afford some idea of the class of art employed in these tombs, a few examples are given of distemper sketches still remaining on the face of the walling between the lines of niches of a tomb in the Villa Doria Pamfili outside the Porta S. Pancrazio at Rome. I have selected those representing buildings, as most interesting to the architect; but there is an immense variety of subjects, as landscapes, birds, trees, animals, fishes and figures of men and capricious objects, as tritons, griffins, &c. &c.; they are only 4 to 6 inches high. The vaulting of the lowermost chamber of the tomb of Vitalis was pierced by openings to afford light and air, and the middle chamber had two windows in the side walls immediately under the groined vaulting. The arrangement of the lower and middle chamber is similar. There is a central projecting compartment on each of the three sides of the lowermost chamber, having a larger niche or recess and surmounted by a curved pediment. The smaller recesses or niches contain one or two small terra cotta cinerary urns, which are indicated on the plans and section, varying in size from five to eight inches in diameter; and a small marble tablet is let into the stucco immediately under some of the apertures with the name of the deceased. The central recesses contain from three to six urns. The following are a few of the inscriptions on the marble tablets, which vary in size from 13 inches by 6 to 8 inches by $3\frac{1}{2}$:—

TOMB OF TI. CLAVDIVS VITALIS. ARCHT

VILLA VOLKONSKY. ROME.





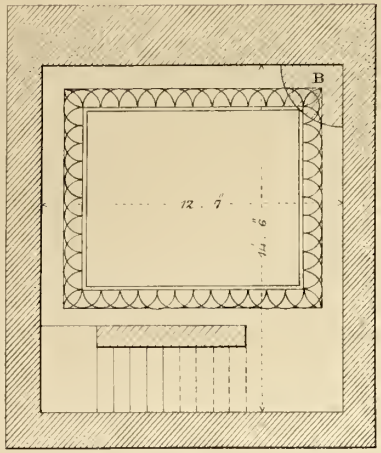
Thos J. Donaldson & H.B. Marshall, mis[t]

0 1 2 3 4 5 10 15 Feet

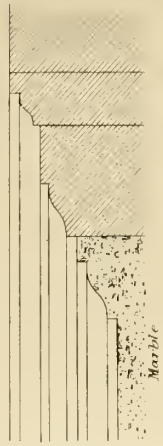
Lithog[d] for the R.I.B.A. by Kell Bros. London. E.C.

TOMB OF TI. CLAVDIVS VITALIS. ARCHT

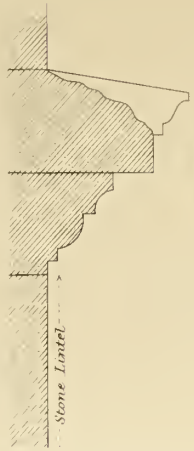
VILLA VOLKONSKY. ROME.



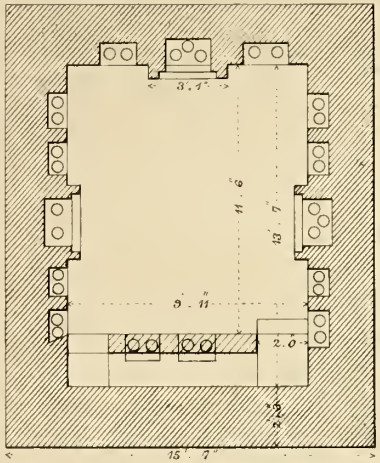
PLAN OF VPPERMOST CHAMBER.



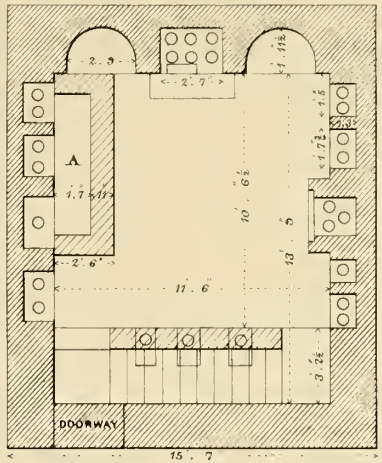
MOVLDINGS OF PANEL.
1/6 SIZE.



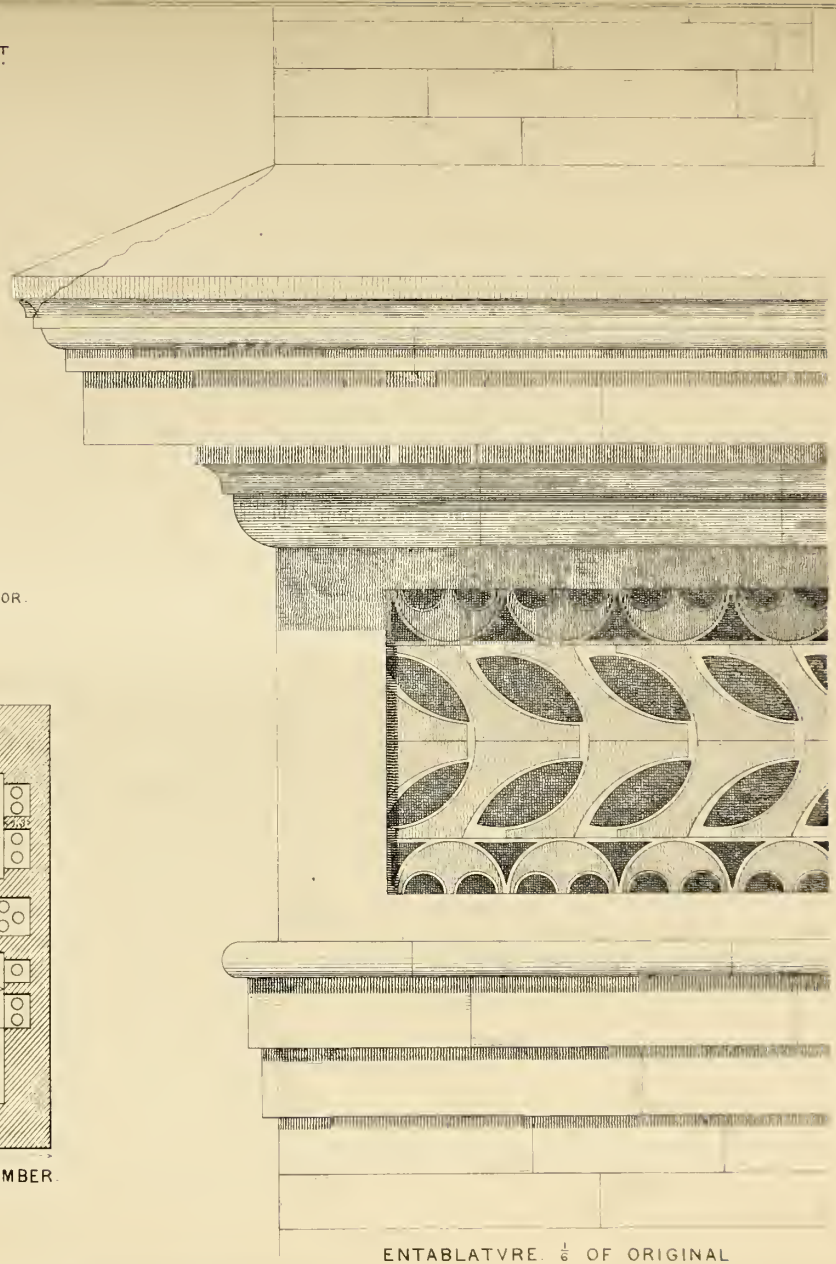
ENTABLATVRE OF DOOR.
1/6 SIZE.



PLAN OF LOWERMOST CHAMBER.



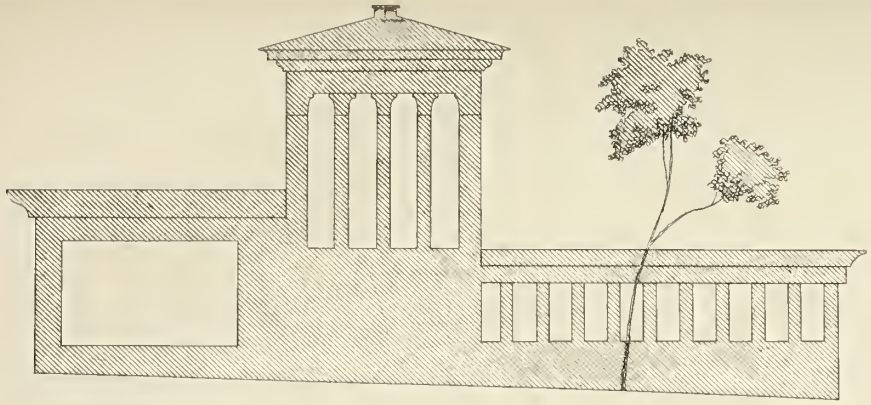
PLAN OF INTERMEDIATE CHAMBER.



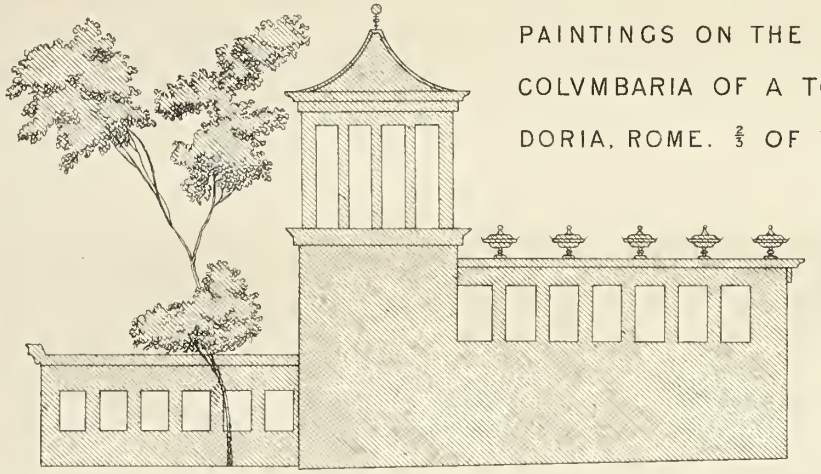
ENTABLATVRE. 1/6 OF ORIGINAL

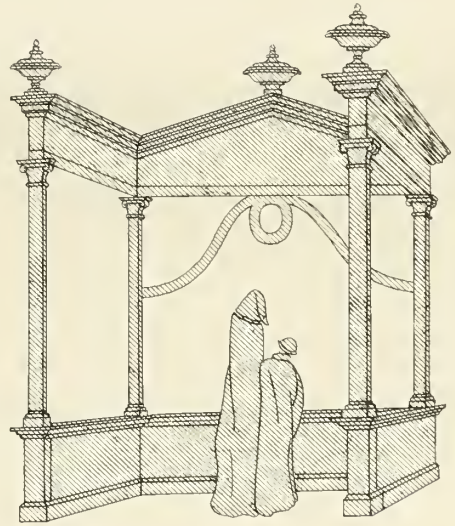
Thos L. Donaldson & H.B. Marshall, mist

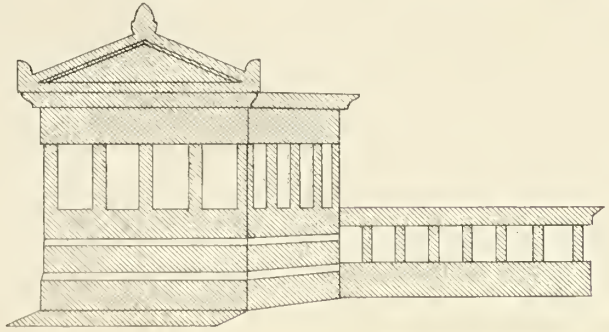
Lithogd for the R.I.B.A. by Kell Bros. London E.C.



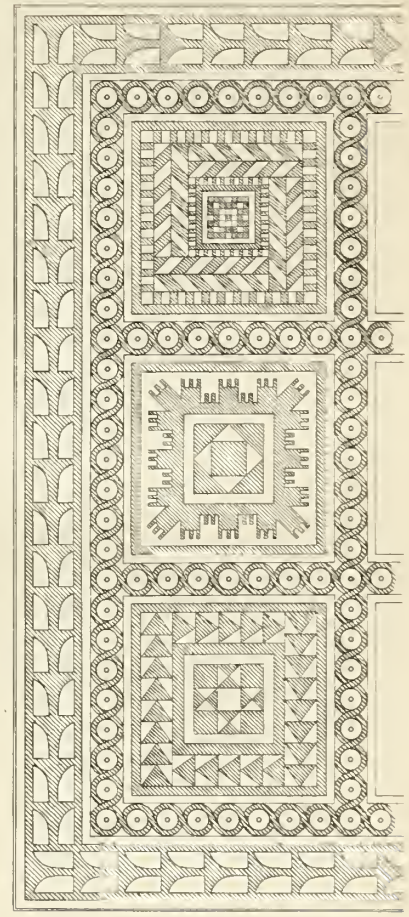
PAINTINGS ON THE FACE OF THE WALL VNDER THE COLVMBARIA OF A TOMB IN THE VILLA PAMFILI DORIA, ROME. ⅔ OF THE ORIGINAL SIZE.







HALF INCH SCALE TO THE FOOT.



THREE OF THE 9 COMPARTMENTS OF THE MOSAIC ON THE FLOOR OF THE MIDDLE CHAMBER OF THE TOMB OF VITALIS, VILLA VOLKONSKY. ROME

Thos L Donaldson.

Lithogd for the R.I.B.A. by Kell Bros London. E.C.

IVLIA · C · B · CHRISION
CONTVBERNALIS
POLI · BI · CAISASAR · VETTIANI

CLAVDIA
POEMNE
SIBI · ET · SVIS

PEREGRINVS
L · VALLI · APII · SER
VIX · ANN · XVII

TI · CLAVDIVS · AVG
AMPHIONIS

TI · CLAVDIVS · AVG
LIB · CALAMVS

C . IVLIVS
AVG · L · PAPA

FORTVNATVS
SEX · MA[· DEIIC
VIX · ANN · IV
MENS · VIII
DIES · III

C · IVLIVS · CISSVS
IVLIAS · THALACSIASI
FIDISSIMÆ
VIX · ANN · XXX

MAIAE
HOSPITAE
MATRI
PVLCHRI

Niches or recesses for cinerary vases are continued in the thickness of the solid construction under the stairs. There is a curious receptacle as for a coffer (A) in the intermediate chamber, evidently a subsequent addition, as it partially covers the mosaic floor. It is quite open and no longer contains any body, bones or other objects, that may have been originally deposited in it. Milizia notices in his "Memorie" that a certain Claudius Vitalis, Architect, appears from some inscriptions to have died aged 40.

The inscription on the tomb of Vitalis, recording as it does the names of two architects, that of Vitalis himself and of Eutychus, who designed and executed the monument, led me to the subject of any other records of architects of ancient times to be discovered among existing monuments. On passing through the galleries of the Vatican I found several. Before describing them, I must notice a remarkable one at Aspendus, in Asia Minor, to which our honorary and corresponding member and gold medallist, M. Texier, has called my attention. In his octavo volume on Asia Minor, pp. 718-2, Monsieur Texier states, that the name of the architect of the Theatre of Aspendus is recorded on an inscription inside, in the following words: "The Senate and people have honored Zenon the architect of the Theatre and of the City-Works: they have honored him with a Statue in the Theatre, and have presented to him a garden near the Hippodrome." One cannot read this inscription without recalling the similar and well-earned tribute to the genius of our late Fellow, Sir Charles Barry, in the statue put up in the Houses of Parliament.

In the long gallery of the Vatican Museum, I found two architectural inscriptions, the one on a sepulchral altar or cippus of marble near the entrance, the other on a marble slab.

DM
AVLIAE · LAODICES
FILIAE · DVLCISSIMAE
RVSTICVS · AVG · LIB
ARCHITECTVS · PATER
INFELICISSIMVS · QVA
VIX · ANN · VI · MENS · VI
DIEB · IIII

DIS · MANIBVS
TYCHICO · IMP · DOM · SER
ARCHITECTO · CRYSPINII
TI · CLAVDIVS · PRIMVS
OLLAM · OSSVARIAM
DONAVIT

Here Rusticus Augustus, *Freedman*, architect, as a most unhappy father, dedicates this memento to his most beloved daughter, Aulia Laodice; and it is remarkable that he, as well as Vitalis, were Freedmen. The second records the name of Tychicus, as architect to the Emperor Domitian. The term "ollam ossuariam," the cinerary pot or vase would indicate, that this inscription was under the niche or recess, which contained the vase, like the inscriptions in the tomb of Vitalis.

It appears that a high official position, Praefectus Fabrum, similar to that of our Chief Commissioner of Works and Buildings, existed among the Romans. In the Vatican gallery, near the entrance, is a marble pedestal, with base and surbase mouldings, adapted to receive a statue, and on its face is a panel containing the following inscription:—

G · N · MVNATIVS · M · F · PAL
AVRELIVS . BASSVS
PROCAVG
PRAE · FABR · PRAEF · COH · III
SAGITTARIORVM · PRAEF · COH · ITERVM · II
ASTVRVM · CENSITOR · CIVIVM
ROMANORVM · COLONIAE · VICTRI
CENSIS · QAEST · IN · BRITANNIA
CAMALODVN · CVRATOR
VIAE · NOMENTANAE · PATRONVS · DEM
MVNICIPI · FLAMEN · PERPETVS
DVVM · VIR · ALIPOTESTATE
AEDILIS · DICTATOR · IIII

We here see that an officer of the high dignity of Aedilis Dictator, twice Præfect of the Cohort of Archers, Quæstor at Doncaster (Camalodunum) in Britain, hence doubly interesting to us, has amongst his other titles that of Præfect of Builders as an honorable distinction.

And another inscription in the same gallery mentions a certain C. Nasennus Marcellus, Senior, as Præf. Fabrum et Curator operum publicorum et aquarum, as not only Præfect of Builders, but also as Curator of Public Works and the Waters, the latter a very important public office in connexion with the aqueducts and fountains of the city.

I also copied at Trieste an inscription, which shews that there was in that city (Tergeste) an ancient Builders' College. It is in the panel of a pedestal having base and sub-base mouldings, and which probably was surmounted by the statue of Papirianus:—

LVARIO
PAPIRIO
PAPIRIANO
II · VIR · ID · II · VIR · IDQQ
PRAEF · FABR · ROMAE
ET · TERGESTE
HAM · HADR · PONT · AVGVR
COLLEGIVM · FABRVM
PATRONO · MERENTI

I cannot conclude these memorials of ancient architects without noticing one to that distinguished architect and engraver Francis Piranesi. It is over the doorway on the first floor landing of the house No. 46, Via Felice, Rome, and is in the following words. It has the portrait in profile of Pope Pius VI. in a medallion. PONTIFICI MAXIMO, CUJUS LIBERALITATE INGENIA CIVIUM VIGENT BONÆQUE ARTES FLORESCUNT, FRANCISCUS PIRANESIUS ARCHITECTUS CUM CONCORDISSIMIS FRATRIBUS DOMINO INDULGENTISSIMO, QUOD MUSEI DOMESTICI NOMEN ET NOVORUM OPERUM FAMA ADITU EJUS ET LAUDE NOBILITATA SINT, MENSE XI OCTOBRI ANNO MDCCLXXXII. This Francesco was nephew of the celebrated Cavaliere Gian Battista Piranesi.

Over the adjoining door of the same landing is the following tribute to Thorwaldsen: PER

MEMORIA DI AVERE ABITATO IN QUESTA CASA ALBERTO THORWALDSEN DURANTE IL SUO LUNGO SOGGIORNO IN ROMA MDCCCXXXXIV.

I am indebted to the kind assistance of Messrs. Marshall and Manby in taking the dimensions and details of the Tomb of Vitalis.

The PRESIDENT enquired whether any member had any remarks to offer upon this interesting description of a very curious monument of antiquity. He had himself visited the Tomb of the Scipios, whose bodies were not burnt after the Roman fashion, but were buried in this tomb; but these columbariæ seemed to have received the ashes of the dead after they were gathered from the funeral pile and the urns were cemented down, and a stone or tile put over the top in the roughest manner. There was the peculiarity in ancient Rome that some noble families, like that of the Scipios, buried their dead, while others burnt the bodies and preserved the ashes in urns. Whether that was peculiar to the races or stations of the families he did not know. Vitalis was a freed man; and, probably, to bury the dead was a costly process.

PROFESSOR DONALDSON observed that there was a strict law with regard to the burning of the dead; the pile was not permitted to be raised within a certain distance from the habitations.

The REV. RICHARD BURGESS remarked that the burying of bodies entire was not uncommon. The very name of sarcophagus given to the stone or marble coffin was significant of that [being composed of two Greek words, σαρξ and φαγω, flesh-consuming] ; it was a mode of interment too costly, as the President has hinted, for the common people, and therefore confined to a section of the community. Byron had said,

"The Scipios' tomb contains no ashes now,"

and probably never did contain the ashes of burnt bodies, except in the cinerary urns of the *liberti*. He agreed with Professor Donaldson, that the study of the ancient inscriptions was very interesting, and he had spent many a day among the inscriptions on the walls of the Vatican galleries; some of them were difficult to decipher on account of the abbreviations, but there was a key in the form of a small book, 'Explicatio Literarum in Romanis Monimentis,' published at Florence, 1822, which was a great help to lapidary reading; it goes alphabetically through the different combinations of letters and the changes of position which alter the meaning—for instance, C L is Caii libertus, but ↄ L is Con libertus and CL Clarissimus. There was a remarkable decipherer of these enigmatical inscriptions at Rome in his (Mr. Burgess') time, named Girolamo Amati, who wrote the inscriptions for the Pope's catafalque; he was a sort of Diogenes, who lived alone with letters half legible on fragments of stones. On the occasion of some unreadable words being turned up at the excavations made by Lucien Buonaparte at the ancient Vitalonia in Etruria, he had a controversy with Baron Bunsen as to whether the language was Greek or not. Bunsen maintained the words were Greek; the characters certainly were, but the words did not render into Greek. "If Greek," said Amati, "read it." But Bunsen was not able to read it. Then it was not Greek. It turned out to be not Hellenic but Pelasgic Greek, which the wandering tribes from Hellas had brought over, and the language seems to have been lost. Visitors at Rome who pay any attention to reading on stones must have remarked on many of the tablets or altars in the Vatican emblematic signs, marks or figures, which have been the cause of much controversy as to their meaning, and some have unwisely been pressed into the service of Christian tradition—for instance, the ivy leaf, so often found on monumental stones, was the Pagan emblem of immortality, but the ivy leaf has a great resemblance to the shape of the human heart, and on this account the inscription on the stone or marble was declared to belong to the tomb of a martyr, and the more particularly when the letters were red, betokening the shedding of blood. This subject, which is seldom brought forward, is one of great interest, and might be followed up with great advantage both to ethnical and ecclesiastical antiquity.

DESCRIPTION OF SOME RUINED BUILDINGS IN PALESTINE.

By Professor DONALDSON, P.P., Honorary Secretary For. Corr.

WHEN, in October last, I left England for my proposed journey to Palestine and Syria, I was in hopes that possibly I might meet in the Holy Land with some specimens or fragments, which might afford a clue, however slight, to the architecture employed by the Jews. I use the word employed, for I could not think that they had an individual characteristic art of their own, for history tells us that they were not, like the Egyptians, Greeks, or other Semitic Races—an autotechnic people. When Solomon decided on building the Temple, he was assisted by Hiram, King of Tyre, not only with timber and stones and gold, but also with builders and stone-squarers (1 Kings v. 17, 18). He also engaged in his service Hiram, a brass worker from Tyre, most probably not the king, though having the same name; and he cast the two pillars of brass (1 Kings, c. vii.), and the molten sea which stood upon twelve oxen. And he cast also the ten bases, with the oxen, and lions, and lavers, and cherubim and palm trees, apparently a most important work; but no properly Jewish mechanic is mentioned in reference to the works of the Temple. We may also infer that, from the long captivity in Egypt, the taste of the Jews must have been influenced by the monuments of that people, such as their temples and statues; and that, if they had any special feeling for art, it must have reflected somewhat of the peculiar æsthetic predilections of their oppressors. Even in after times they were either as enemies or friends, brought into close contact with the Egyptians, and it is supposed by some, not without reason as likely, that when Solomon built the house for his Egyptian bride, the daughter of Pharaoh, he would naturally employ the famed Egyptian workmen, and erect it in the Egyptian taste, and according to the arrangements of her native land. In fact, in the Ninth Chapter of the First Book of Kings, it is especially recorded that "Solomon employed the Amorites, Hittites, Perizzites, Hivites and Jebusites, which were not of the Children of Israel, as his workmen; not using the Children of Israel as such, for they were men of war, and his servants, and his princes, and his captains, and rulers of his chariots and his horsemen, and five hundred and fifty of them acted as chief officers over the work, bearing rule over the people that wrought in the work." The Greeks also, during the time of the successors of Alexander, ruled in Judea; and, subsequently the Romans, particularly during the government of the Herods, stamped with their impress the architecture of the Jews. We saw in the Valley of Jehosaphat that the tombs have the Greek features; and in the ruins of Samaria, in the remains of cities on the banks of the Lake Tiberias, and of Cæsarea Philippi on Mount Hermon, details essentially Roman, and mostly of a late period of the art of that people. Churches, castles, and other monuments of the Byzantines, Crusaders and Saracens, of the middle ages, are to be found scattered over the face of Land; not in very great quantities, and almost all ruined. But one specially, and which we might conceive to be a radically Jewish building, nay Jewish fragment, who has ever found? I have earnestly desired to discover even the smallest relic of the artistic genius of that people; but all which I have seen, whether of marble, stone or pottery, bear the impress of the taste and execution of the races of other nations, already alluded to by me. And do not all these circumstances bear on the prophetic denunciations of Our Saviour, recorded by the Evangelists? In reference to the Temple and its stones and great buildings, He foretold that "not one stone should be left upon another, which should not be thrown down, and that the city should be laid even with the ground." Besides which, the Temple, described by Josephus (Book vi. c. x.) was not the temple built by Solomon. That had been demolished entirely by the Babylonians, and had been twice rebuilt, and had had

considerable enlargements, and colonnades added by Herod doubtless of Roman architecture. Titus ordered, as we find in the First Chapter of the Seventh Book of the Wars of the Jews, "that the army should demolish the entire City and Temple, but should leave as many of the towers standing as were of the greatest eminence (the loftiest); that is Phæsalus, and Hippicus, and Mariamne (all built by Herod), and so much of the wall as enclosed the city on the west side, and which was spared in order to afford a camp for such as were to lie in garrison; and the towers also were spared in order to demonstrate to posterity what kind of city it was, and how well fortified, which the Roman valor had subduced; but for the rest of the wall, it was so thoroughly laid even with the ground by those, who *dug it up to the foundation*, that there was left nothing to make those coming thither believe it had ever been inhabited." And this was the less difficult, as the rock upon which these erections were based, is immediately under the surface of the ground, here so scanty of soil.

Hadrian razed to the ground the ruins left by Titus, and a plough passed over the foundations of the Temple; but he built a city there, calling it AELIA CAPITOLINA. The Jews throughout Palestine soon rising in rebellion, he crushed the insurrection, and ordered about a thousand of their principal cities, says Goldsmith, to be destroyed; and surely among these we may count Jerusalem. Julian the Apostate subsequently began a temple on the sacred site; but it is probable that it was not very far advanced, as he died within six months of its commencement. I shall not trouble you with allusions to the erections of Constantine and the Greeks of the Byzantine Empire, nor of the Saracens and Crusaders, remains of which lie scattered at distant intervals throughout the Holy Land. But the succession of tastes, which distinguish these several races, presents considerable difficulties in attributing the buildings to one or other of them. Still there are certain *indicia* in most cases to enable the experienced traveller to identify approximatively to whom they may be appropriated. But of any special Jewish artistic element none appears to me to have been as yet brought to light; and the mysterious darkness, in which researches for the purpose have been lost, seems to realise the fulfilment of the utter destruction foretold in prophecy.

We may assume, complete as may have been the overthrow of the successive temples of Jerusalem up to the Christian period, and afterwards by Titus, that although the smaller architectural features of the columns and decorations of the buildings in the city may have been destroyed, yet the main masses of the construction of walls must have been left strewn on the surface of the ground, filling up some of the valleys; for so hilly is the country round Jerusalem, that the transport of massive blocks imposed a difficulty and expense inadequate to any purpose. We may consequently suppose that the present substructures and walls do contain many of the huge blocks of former epochs, and present various periods of execution, as is found in Greece and Italy. Each succession of builders, from motives of economy of expense and labour, would re-use those blocks ready for use, and redress others that required alteration for their immediate purpose. But I saw none but such as were identical with the construction used by the Romans. The hugeness of some blocks are not unquestionable evidences of high antiquity, for none are so immense as the gigantic masses to be found at Baalbec and Palmyra of the period of the Antonines. And the Saracens in Baalbec converted the enclosure wall of the great Temple into fortifications by forming parapets with embrasures, and constructing towers out of stupendous blocks of the magnificent Roman construction, and which must have required immense mechanical means to move and set in their place.

The present walls of Jerusalem and of the Haram area are to my eye composed of blocks of stone, whether of large or small dimensions, and of fragmental shafts of columns, identical with those of the Roman times, and having no distinctive evidences of a more remote period.

I wish to correct the term 'bevelled,' as applied by recent excavators to blocks of stone at

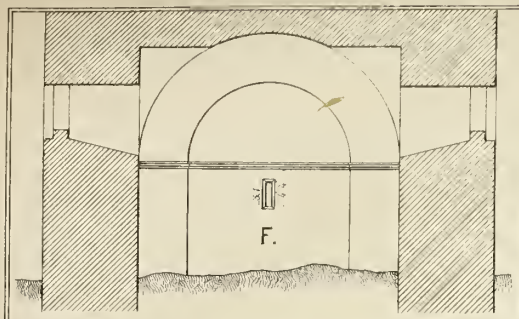
Jerusalem. A bevel means a splayed angle or edge, as (A); but this technical phrase has been used in describing the blocks, which have a margin round the edge about two inches wide, and sunk about a quarter of an inch below the general face as (B).

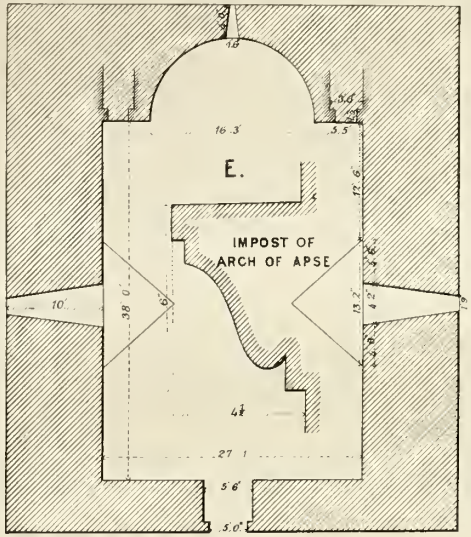
I have ventured to make these general remarks in order to account for my not being able to adduce any satisfactory evidence of antique Jewish art: besides which, my stay at Jerusalem was too brief, and the objects to be seen too numerous, to allow of a more thorough investigation of the subject. These suggestions may be offered also as an apology for the few buildings, of which alone I was able to take some very slight memoranda in the Holy Land, between Jerusalem and Nablous. In the company of fellow travellers, who are impatient of what to them seems unnecessary delay, to inspect buildings not generally interesting or important, and the fatigue of constantly riding on horseback for hours together, and over villanous roads, somewhat damps one's energy and enfeebles one's powers. And on an excursion like our's, time does not allow of one's interrupting the journey by stays of a day or two, or more, at every point, where ruins indicate objects really worthy of lengthened study. We had made a trip of three days from Jerusalem to visit Jericho, the Jordan, the Dead Sea and Bethlehem, and after passing a couple more days at Jerusalem we started on our journey northwards, up Palestine towards Damascus.

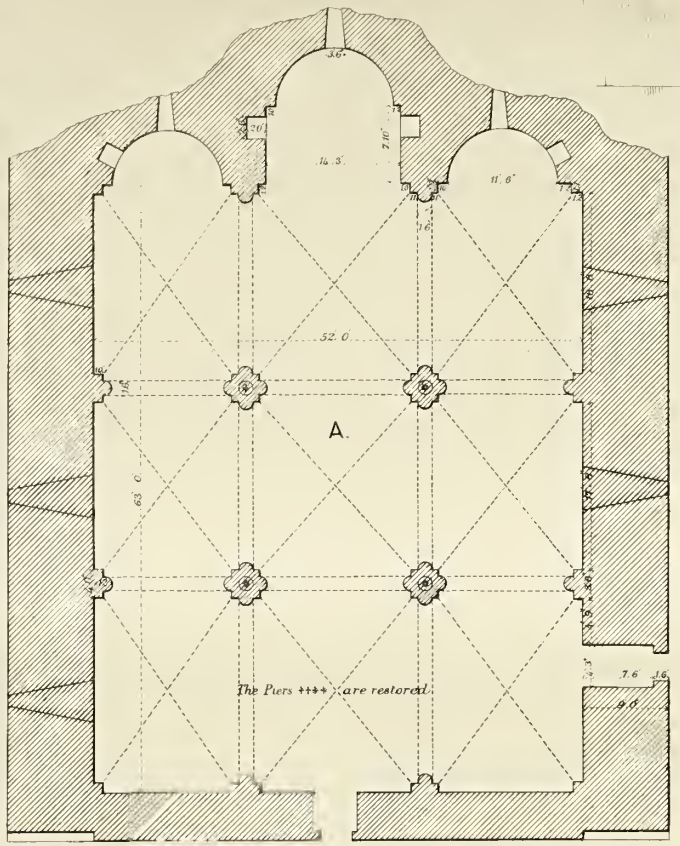
BIREH or BEEROTH is about three hours' ride, and there we halted, near a copious fountain, for our mid-day rest, and saw the ruins of a church, which the author of Murray's Handbook considers to be a Latin one, built by the Knights Templars during the time of the Latin kings of Jerusalem; but the triple absidal end seems more to indicate a Byzantine arrangement. The inside dimensions within the walls are 65 feet long by 50 feet 9½ inches wide, with a central nave and side aisles having absidal ends. There were two clustered pillars on each side of the nave, from which spring the groinings of the vaulted ceilings. In fact, we may assume, that all the larger buildings of the Holy Land had arched roofs, for apparently there was formerly, as at present, very little timber in the country. The nave has at the end a chancel 7 feet 10 inches deep, with a recess or niche in the walls on either side, and each of the side aisles has a like recess. There is a door at the west end, and one on the south side. The lateral walls measure 10 feet thick. There is a small window in each of the absides, and photographs* evidently shew lights in the side aisles. Under a porch near the church at Beeroth is a doorway with a slab of stone 5 feet 6 inches long and 3 feet high, used as the lintel. It is sculptured with small attached columns of the early pointed gothic style, surmounted by intersecting arches, which are stopped at one end by a short column on the line of the arches. There is also a considerable ruin, consisting of several vaulted chambers, and supposed by Murray to be the remains of an ancient Hospice.

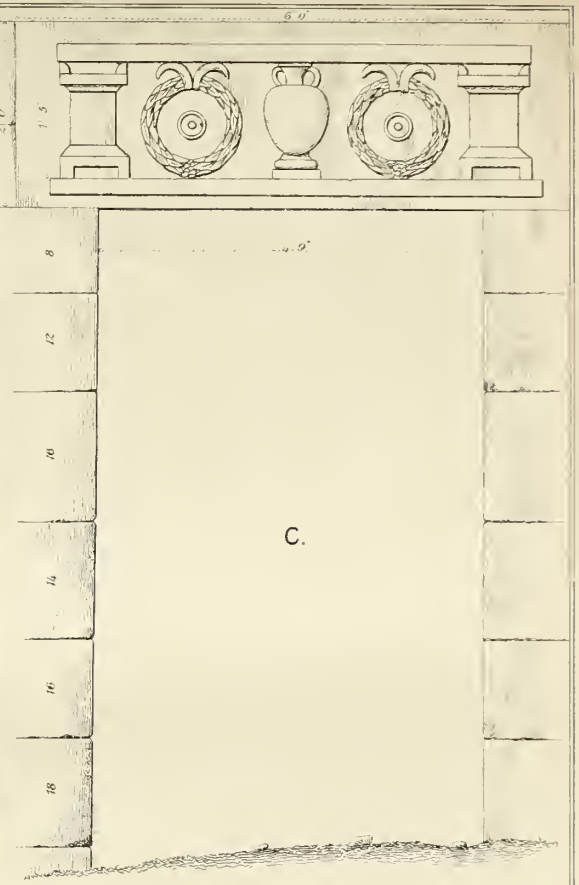
The same day we reached BETHEL, and slept there for the night; recalling to mind that here Jacob slept, and had his prophetic dream of the Ladder. Three or four acres suffice to contain the ruins of past times, and the village. A small Byzantine church 38 feet 2 inches by 27 feet in the clear inside, with walls 10 feet thick, to resist the thrust of the arched roof; and the whole now dilapidated indicates a place of no great importance. There is an apse at the altar end, and a small closet on one side, 3 feet 6 inches wide in the thickness of the wall. There was a slit window in the apse, and openings for lights in the side walls, and the vaulting was cut into in order to receive the window

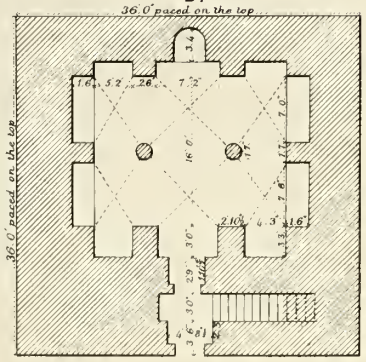
* The series of photographs taken for the Palestine Exploration Fund are most valuable illustrations of places and ruins in the Holy Land.











BVILDINGS IN PALESTINE.

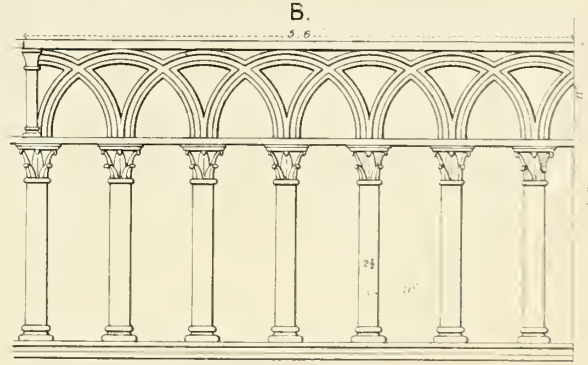
A. CHVRCH AT BIREH ANCIENT BEEROTH.

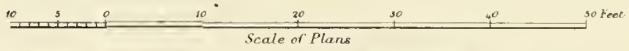
B. FROM A PORCH NEAR DITTO.

C. DOORWAY OF A TOWER AT SHILOH.

D. TOWER ON A MOVND NEAR SHILOH.

E.F. CHVRCH AT BETHEL.





Thos L. Donaldson, mist.

Lithogd for the R.I.B.A. by Kell Bros. London E.C.

opening. The impost moulding of the apsidal arch is the only decorative feature left. The springing of the vault was somewhat below the impost moulding of the apsidal arch. There was a doorway 5 feet 6 inches wide at the west end.

The next day we halted in the afternoon at SHILOH, the interesting Scriptural Town, where the Tabernacle of the Lord of Hosts rested for so many years. On the summit of the rising ground, apparently outside of the town, is a square building, of mediæval date, half church half a tower in its character, constructed of fragments of the classic times. I saw the fragment of a shaft of Cippolino marble 2 feet in diameter, and the lintel of the doorway is formed of a single slab of stone 6 feet long by 2 feet high. In the centre it is sculptured with a two-handled amphora or vase, which has on each side a wreath with a patera in the centre, and beyond these wreaths again is carved an altar, thus forming a very elegant and interesting group of two altars, two wreaths and the centre vase. While I was making my notes, my fellow travellers had ridden off, so that I was left alone, and could not more minutely examine the building, nor take the plan, for I was annoyed by an importunate stout fellow of an Arab, so as to be obliged quickly to mount my horse and gallop off. I regretted also that I could not inspect the buildings in the village, for I think it probable that there are some curious remains to be discovered there.

I rejoined my companions, who had halted upon the summit of a knoll on the other side of the valley, where there is a shady oak, under which our party took their mid-day repast. Here also is a tower resembling in its arrangement the building on the other side. It is 36 feet square, and is entered by a central doorway, which leads into a square chamber, having two columns 21 inches in diameter, from the capitals of which the arched groining springs. The niche at the further end would indicate its being used as a place of worship; and it is as much calculated for a Mahometan as a Christian site. There are recesses in the thick walls all round. Immediately within the doorway of entrance there is to the right a flight of steps leading up to the terrace or top, which is now quite flat without any parapet or enclosure.

P.S.—I would also call the attention of my professional brethren to the very interesting and still sufficiently preserved though desecrated church at Kirjath Jearim, Kuryet-el-Enab, on the road between Jafa and Jerusalem, and about three hours' ride from Jerusalem. It is of the Pointed period of mediæval art, very simple, with a central nave and side aisles, and having three square piers on each side of the nave, and consequently four arched openings. The nave and side aisles have apsidal ends, and the roof is vaulted and groined. Traces of the mural paintings still remain, and with sufficient distinctness to enable one to make out their subjects. The whole building is well worthy the architect's attention, and is a valuable specimen of that period. It deserves to be thoroughly measured and illustrated in every particular.

On the road between Jerusalem and Jericho, at about two and a half hours' from Jerusalem, is a ruined Caravansary, called Khan el-Ahmah, situate near a fountain, and consequently a convenient place for the mid-day rest. The fragments of walls and vaulting are still considerable, and afford sufficient indications for the general arrangement of the plan.

The important explorations at Jerusalem, now carrying on under the enterprising and earnest direction of Lieut. Warren, R.E., are at present so almost exclusively of an archæological rather than architectural character, that I have not alluded to them; and they have little reference to the purely artistic enquiry, which occupied my attention. I think it would be a subject of deep interest, and likely to afford very important results, if endeavours were made to ascertain the precise positions of the three great Herodian Towers, above alluded to. If their sites were discovered, they might afford the clue for fixing various other historical localities.

I cannot forbear alluding to the fulness and accuracy of the information given in Murray's incomparable handbook of Palestine and Syria, the fruit of the unwearied research and intelligent observation of its well-informed author.

On the conclusion of Professor DONALDSON'S Paper, Mr. J. P. SEDDON, Honorary Secretary called the attention of the Meeting to some specimens of American marbles, lent for exhibition by G. G. Scott, R.A., Fellow, and read the followiug description of them:—

"The marble occurs in beds and strata, varying in thickness from one to six feet, and will split across the bed or grain: blocks of any required size can readily be obtained. Its closeness of texture and hardness renders it susceptible of high polish, and it will resist to a remarkable degree the influence of atmospheric changes, and is hard to deface with scratches or acids; this fact should attach to it additional value, and its variegation in colour, as shown by the specimens, taken only from its outcroppings, give promise of a much richer development as the bed of the quarry is reached, and must equal in beauty and durability the highly prized Oriental marble of aucient and modern times; and from its facilities of access entirely by water to all the markets of our country, and to the seaboard whence it can be shipped to all foreign countries, must bring it into general use here and elscwhere whenever coloured marbles are required for building and ornamental purposes. It occurs in latitude 44°, a great body projecting up in the bosom or bay of Lake Champlain, forming an island of some acres, outcropping upon each shore, giving evidence that the deposit extends across and forms at this poiut the bed of the lake."

Professor DONALDSON stated that when he was in Baalbec in December last, he picked up and brought home some specimens of the stones employed in building the gigantic structures there, now in ruins. He had sent these to his friend Professor Ansted, with a request that he would be good enough to favour the Institute with his opinion of them, and he believed that gentleman was now prepared to say a few words on the subject.

Professor ANSTED said, before referring to the specimens to which Professor Donaldson alluded, he would say a word or two with regard to the series of marbles from Lake Champlain which he had inspected since he had been in the room. He had previously seen specimens from the same locality on a larger scale than those now before them; and it might possibly have escaped the observation of gentlemen, who were doubtless struck with their great beauty, to notice that a portion of these marbles consisted of argillaceous material, which was present in such proportion as to render it unfit for use in the exteriors of buildings in this country. The marble itself was very beautiful. It was richly veined and was capable of receiving a high polish; but on close inspection it would be seen that the polish was variable: in some places it was not complete, and it should be understood that where they saw a crack or a dull part on the marble it afforded but a bad prospect of permanent wear. At the same time, being a beautiful material in itself he had no doubt it would answer very well for chimney pieces and internal ornamentation, although he questioned its adaptability for external work.

The PRESIDENT asked whether they were better than, or different from, the Devonshire marble.

Professor ANSTED replied they were different, but he doubted their being better. Most of thc Devonshire marbles were deposited limestones; but thcse marbles were more perfectly crystallized and had less carbon than the Devonshire marbles and were capable of a higher polish.

The PRESIDENT remarked that the marbles he had seen in Torquay had as high a polish as the specimens on the table.

Professor ANSTED meant they would retain their polish better: the harder the material was the better it retained the polish. With regard to the Baalbec stone which his friend had submitted to him he had not much to say beyond the fact that it belonged to a class of fresh-water limestones, which were of tertiary origin, and were very widely extended over many parts of Asia Minor and the Greek Islands. It was not the same limestone exactly as was used in the Cyclopean buildings in Greece, but was much the same sort of thing. No one could have seen specimens of those walls without being struck with the perfect adaptability of the material to the climate in which it was employed. The specimen sent to him was of a similar kind. He did not know whether it belonged to a large stone or not. [Professor DONALDSON said it was a mere fragment which he picked up accidentally.] The whole country (continued Professor ANSTED) was composed of this stone, and it was capable of being worked with comparative facility, and, when dressed, would probably retain the sharp edges for 2,000 years without change; but there could be no doubt the stone would not weather so well in this country. The same class of stone had been used for the principal limestone buildings of Greece, with the exception of those for which marble was employed. They did not admit of much polish, but were capable of being squared very easily. In reply to the President, Professor ANSTED added that the enormous stones found in these ruins were limestones of the same general character, of fresh-water origin.

ABYSSINIAN CHURCH ARCHITECTURE.

By William Simpson, F.R.G.S.

Having had the opportunity of visiting Abyssinia during the late expedition, I was able to make a few sketches and notes of the architecture of that country, and these I propose to lay before you in the following paper.

So far as the geography of the country relates to the subject, it will be sufficient for our purpose to divide it into the southern and northern sections. Tigré for the first and Amhara for the second may be used as the names of the two principal divisions. Tigré, or the northern portion, contains the remains of the city of Axum, the ancient capital of the whole country. It possessed, in its days of power, an army who, so far from being ignorant of the services of the elephant, used them for military purposes; nor were ships unknown, for the kings of this old metropolis had a navy on the Red Sea, by which they had become its masters. They even carried conquest to its opposite shores, and laid the sacred city of Mecca under tribute. The name of Baharnegus, or "King of the Sea," a title still held by one of the chiefs of Tigré, is all that remains now of this naval supremacy. This Lord High Admiral has no fleet, and for generations past has not even had a sea coast to defend. It is a high sounding title, left like a fragment standing amidst the political and social ruins of the country, and it suggests a fit figure to place beside the ancient Obelisk of Axum. That one solitary pillar is all that now remains out of many fragments prostrate around it. The purpose of these erections is unknown to the present race of Abyssinians, their builders are forgotten, and the language of their inscriptions is now dead in the country. They have, indeed, a tradition that it was put up by Ham after the Flood, and that Japhet, in Europe, and Shem, in Asia, erected similar monuments; but this is only to be classed with the other legend that the real Ark of the Covenant, and original copy of the Law, is in the Church of Axum, where it was placed by Menelik, son of the Queen of Sheba, who carried them off from Jerusalem.

I deeply regret that I was unable to see this celebrated spot. Lord Napier was anxious not only to pay it a visit himself, but to give those who were with his camp an opportunity of doing so. A flood, from the rains, had more than once swept down the Sooroo Pass, destroying stores and even human life. As this rendered all delay dangerous to the safety of his troops, the Commander-in-Chief would not run the risk of even a single day's stoppage; and thus a trip to Axum, which all had looked forward to with the greatest interest, was unavoidably prevented.

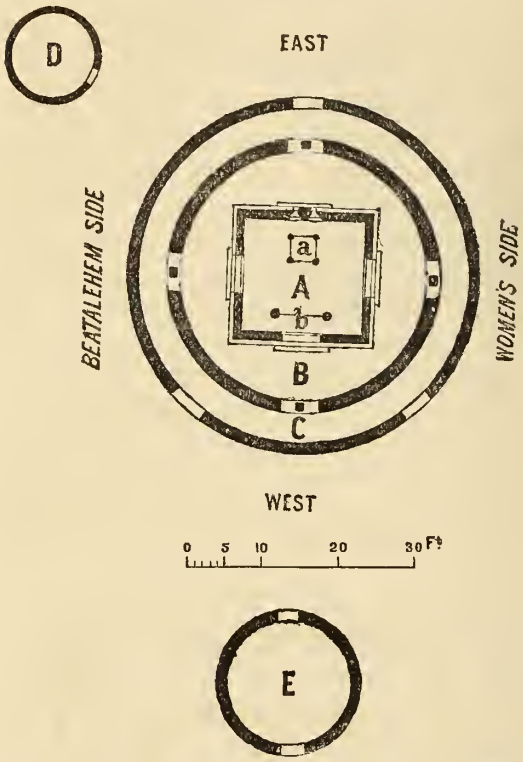
Amhara, which is the principal province in the southern portion of Abyssinia, is now best known from its associations with the doings of the late King Theodore. Gondar is the principal town in this locality, and was formerly celebrated for the number and sanctity of its churches. There were upwards of forty, which is a large number for an Abyssinian town; but, with the exception of one or two, all were *looted* by Theodore. Towards the end of his career, his large army was difficult to support, and the Church valuables lay temptingly at hand. By a sudden and unexpected attack the defenceless priests and people were overpowered, the churches and houses most unceremoniously plundered by a wild and lawless soldiery, and the whole place reduced to ruins. Although Axum was the ancient capital, Gondar has had in later times the principal claim to that title, amongst which is the "Beata Abuna," the house or residence of the Head of the Abyssinian Church, and the "Beata Itcheghé," the house or residence of the head of all the monks in the country. These two functionaries constitute the ecclesiastical government of the Coptic Church.

The distinctive character which marks the northern architecture from the southern, is that its churches are square or oblong. The Amharic, on the other hand, are round. This rule applies to houses and all buildings in both districts, for here, in a most rude and primitive country, we recognise that well-known principle of the identity in the architecture or building of the church with that of the domestic dwelling. In the northern part, where the churches are square, the houses are the same ; in the south they are both round. Even in the material of building the rule holds good. In some places stone is used, and there the House of God and the house of man are constructed of this more enduring substance. Where wood is used, wattle and mud, or even where the merest shed represents the architecture, and this last is the most common style of Abyssinian erections, the church and the dwelling are in every case similar in their construction. This identity is still further shown by the word which expresses house and church being the same. It is *beat*, and is only a slight variation of the Hebrew word *beth*, which had also the same double signification. When the Aryans entered India the house was the temple, and the hearth was the altar where the Vedic hymns were sung. I have been in a camp of nomadic Buddhists in the high regions of Tibet, and I was taken into a tent similar to the others which was fitted up as their *gonpa*, or church, the whole scene forcibly reminding one of the Tent of the Tabernacle, with the tents of the people around it. Theodore, from his wild, warlike habits, was seldom long stationary at any place ; he loved a camp life, and always near to his own tent was another fitted up as a church. This identity between the temple and the house has been all but lost in the advanced civilisation of Europe, but in its original conception it had a beautiful and valuable symbolical meaning.

A more detailed description of one of the round churches of Amhara will help us more fully to explain in what respect it differs from the northern ones. The first point of importance is that they are all built with a three-fold division, which they say is in imitation of the Tabernacle and the Temple. Each division is enclosed by the others, the sanctum forming the centre. It is in all cases square, and the two other courts are formed of concentric circular walls. There are no larger churches equivalent to our cathedrals, or smaller ones that might be called chapels. This may be explained by the fact that there is only one bishop, who can exercise all his episcopal functions in his own house; and therefore there is no great variety in the dimensions of the Abyssinian churches. A few might be found larger than the round portion of the Temple Church of London, but for the most part they are smaller. If any one will picture to himself the Temple Church, with a rough thatch roof, such as may be seen in Ireland or the Highlands of Scotland, and the walls formed of very rough posts, interlaced with a basket-work of smaller branches, perhaps mud being added by way of plaster, he will get a very fair idea of the general external appearance of an Amharic round church. The apex of the roof is surmounted by a cross, which is often decorated with ostrich eggs, and the whole is surrounded by trees, generally of juniper, cedar, the cypress, or the khol-khol. On the route of the army, which was for the most part mountainous, rocky, and bare, these clumps of trees, with the conical roof and the cross at times visible through the foliage, were most pleasing to the eye, and formed cool, refreshing nooks to rest in during the march. Almost in every case they were situated near a running stream, for the purpose of ablutions and purifications, in which the Abyssinians are said strictly to observe the Levitical law.

The sanctum, or *makdas*, as it is called, from a Hebrew word, meaning the holy or consecrated place, is a square apartment ; the length of the sides may vary from perhaps ten to about fifteen feet. These sides face the cardinal points, and the altar is situated a little out of the centre towards the east. The altar is named the *tabot*, and is considered by the Abyssinians to be identical with the Ark of the Covenant. It is generally formed of four upright posts, with a shelf, called the *menber* placed about four feet from the ground, and a rude piece of cloth or matting is thrown over the top of

the posts serving as a kind of canopy. The menber or shelf is the real altar. Upon it is placed a piece of marble or alabaster, usually decorated with crosses and the name of the patron saint of the church, over which a cloth is spread, and on this the elements are placed in the act of consecration. On the western side a curtain is hung up to represent the Veil of the Temple, and serves to hide the tabot when the western door is opened. This door is only used for the priests and deacons to bring forth the sacrament, which is administered on its steps. No table is here used; the bread is in a basket covered with a cloth, and the wine in a chalice, both being held by the attendant deacons. When the ceremony is over the priests retire, and the door is closed again till the next celebration. There is a door on the south side, which I think is seldom or never used. That on the north is called the *beatalehem* door, because the bread and wine are there brought in. There is always a door formed on the east face, but it is in every case built up, and only a small slit or window is left. The reason for this may perhaps be found in the xliv. chapter of Ezekiel. "Then he brought me back the way of the gate of the outward sanctuary which looketh toward the east; and it was shut. Then said the Lord unto me: This gate shall be shut, it shall not be opened, and no man shall enter in by it, because the Lord, the God of Israel, hath entered in by it, therefore it shall be shut." And it may be worth noticing that the Golden Gate at Jerusalem, which "looketh towards the east," is also built up, and only two very small windows or slits are left. This eastern opening is called by the Abyssinians "the door of light." This description indicates, then, a door opening towards each of the cardinal points. The walls of this Holy of Holies are always plastered so as to make the place perfectly concealed. None but the priesthood are admitted. The ceremonies are performed in almost total darkness, the light of a small taper being all that is used. The small glimmering which penetrates through the slit of the door of light is very small indeed, for it is only a borrowed light from that which passes through the two outer walls. In those churches which I visited they all changed from the square ground plan into a circular form above, and terminated in what seemed to me a dome; this dome forming a roof to the sanctum, and being quite independent of the thatched covering of the whole edifice.



Plan of Round Amhara Church.—A, Makdas, or Sanctum. a, Tabot, or Ark—the altar. b, The Veil. B, Kudist, or Second Court. C, Kuneh-Mahelet, or Third Court. D, Beatalehem, or House of Bread. E, Deja Salaam, or Gate of Bowing-down.

The second court is called the *kudist*, and is formed by a circular wall leaving a narrow passage of only a few feet at the corners. This is pierced with doors, also facing the cardinal points, like the inner sanctuary. In the better class of churches a wooden post divides each of these into double doors. The eastern door is not built up in this wall, and the congregation may enter freely and pass all round it.

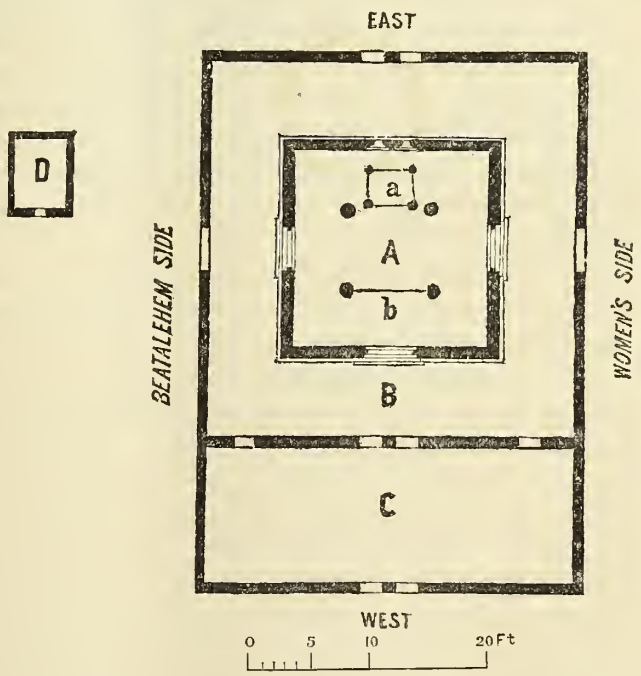
The third court is called the *kuneh-mahelet*, from a psalm or song, because it is in this part of

the church that the male part of the congregation sing during the service. This enclosure is not the same in every church. In some cases the doors open towards the cardinal points, but in others they are placed where required. A door on the south side is appointed for the women, for their place in the church is on that side. Thus the Abyssinian church follows the eastern idea of separating the sexes. In practice this is not very strictly adhered to, but its importance in former times may be estimated from the fact that the whole southern portion of the building is still distinguished by the name of the "women's side," and the door is the "women's door." The entrance for the male portion of the congregation is on the north side, but that portion of the church takes its name from another circumstance. All the Abyssinian churches have a small house built at a little distance from the north-east corner; this particular position in reference to the church is never deviated from. The purpose of this house is to prepare the bread and the wine for the sacrament, and it is called the *beatalehem*, or house of bread, and the "beatalehem side" is used to distinguish the whole of the northern half of the church, and the entrance by which the elements are carried into the church is called the "beatalehem door." It is worth noting that in most of the smaller village churches the wall of the third court is very seldom carried all round the building. The psalm-singing is only performed in the front, or west, on the beatalehem, or men's side; and here only a portion of the wall is erected as a shelter for them, forming something like a porch to the church. A wall round the church encloses a burial-ground, and in this wall to the west is a doorway, called the *deja-salaam*, or gate of bowing down. A building is generally attached called the *ekabeat*, which serves the purpose of a sacristy.

This description contains, I think, the main features of an Abyssinian church. What must seem strange is the curious adherence to Jewish forms. Here is the ark, the veil, the Holy of Holies in darkness, the three courts, all in direct imitation of Solomon's Temple, and the Tabernacle in the wilderness.

There were no steeples to any of the churches which I saw, nor anything that could be supposed to have been a tower. Instead of bells there were two stones suspended between a couple of low posts. They were struck by a smaller stone, and gave forth a clear musical sound, each stone having a different note. In Abyssinia they were called *dowell*.

In the northern part of Abyssinia all these forms are also to be found; but the arrangement of them is different; there is a greater variety in the mode of construction than in the south, and the causes of this variety will be suggested as we proceed. The church of St. Kirkos, at Addigerat, in Tigré, may be taken as a fair example of the square style of construction. The sanctum is square, and the same in every particular as that already described; but the kudist, or second court,



Plan of Square or Northern Church.—A, Makdas, or Sanctuary. a, Tabot, the Ark or Altar. b, The Veil. B, The Kudist, or Second Court. C, The Kuneh-Mahelet, or Third Court. D, The Beatalehem, or House of Bread.

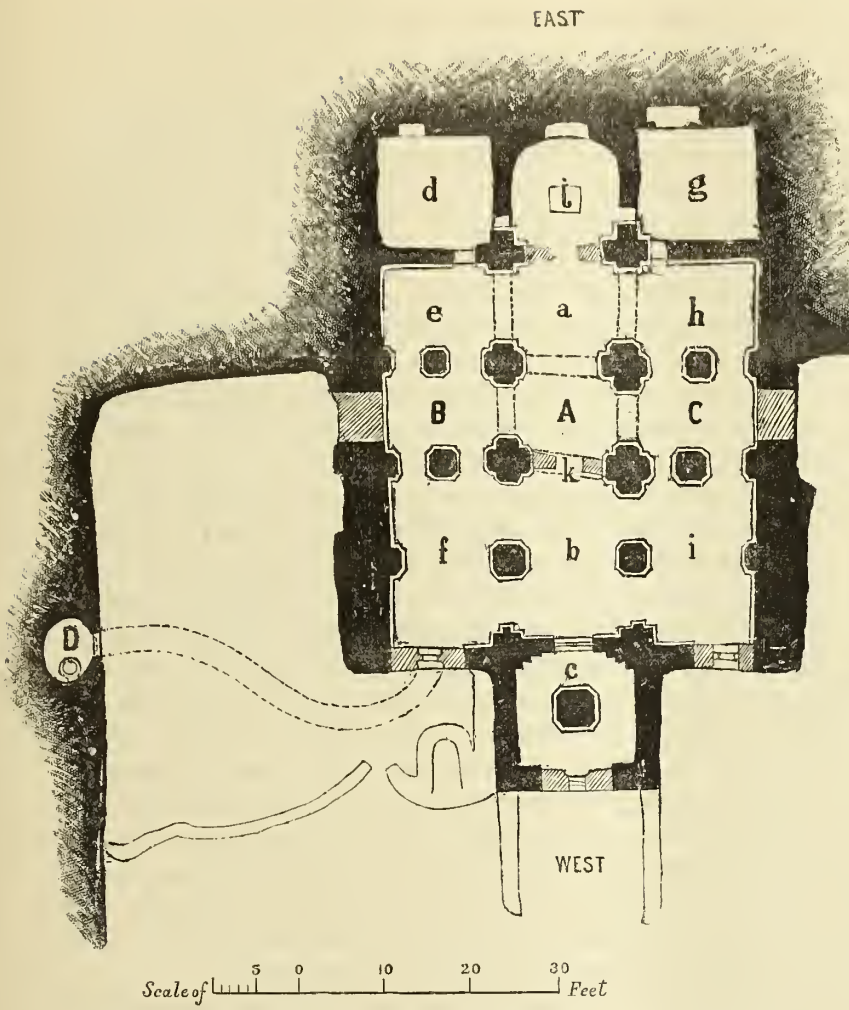
instead of being circular, is also square, forming a passage of a few feet in width all round; and the third court, instead of enclosing the others, is only an elongation of the building on its western face, thus forming a pronaos. The beatalehem is a small, square building, and the deja-salaam, as a house, is built likewise in the square style peculiar to the north.

The church of Miriam, at Focado, about twelve miles north of Addigerat, may be taken as another example of the Tigré, or square style of construction. This edifice was a good deal out of repair, but had been tolerably well built with stones, and the western entrance had a substantial stone pillar in the middle, making it a double door. Here the second court did not surround the sanctum; it was merely an extension of the building to the west; and the third court was a still further extension in the same direction. A solid wall in each case divided these compartments. Each division varied in width; the second court was a few inches wider than the Holy of Holies, and the outer court narrower again by two or three feet. Thus was maintained the character of each as a separate house, such as we see in the chancels of our churches at the present day. The form may be traced as far back as the plan of Solomon's Temple, and is also visible in the temples of ancient Egypt. Another peculiarity in the church at Focado was a square apartment to the east of the tabot or ark, the opening to which was arched. It was only about one-third of the width of the church, so that on the outside it had quite the appearance of a chancel built on to the end. The space left vacant at the corners was converted into two small rooms.

In comparing the plan of the round church of Amhara with that of Addigerat, it is evident that they are substantially the same. The difference between them is very slight,—the one is a circular and the other a square form of the same arrangement; but when we look at this Focado church, quite another aspect presents itself. We have, indeed, the threefold division, which is such a prominent point in the Abyssinian church, but that onion-like arrangement where each court encloses the other, formerly the peculiar feature of the Amhara construction, is here totally wanting. The third court of the Addigerat church being arranged in the manner of those at Focado, gives a slight appearance of resemblance; but the chambers to the east of the tabot is a new and quite a distinctive feature. Before attempting to give an explanation of this, I will proceed to describe the rock-cut church of Dongolo.

Dongolo,—also the name of a place on the Nile, well known for architectural remains,—was one of two small stations on the line of march between Addigerat and Antalo. The church was on a rising ground, with bare masses of rock projecting, one of these masses being scarped or excavated, formed the work under consideration. According to the inquiries which were made, the church was excavated in the year of Christ 333, corresponding to the European reckoning of 325 A.D. Its name is Kados Kirkos, a favourite boy saint of Abyssinia. Its founders were two emperors, named *Atsbaha*, "The Dawn," and *Abraha*, "The Light." They were twins, and reigned in Abyssinia together at the period when Christianity was first introduced. All the information we got, and it came from different authorities, agreed in these facts respecting its traditions, date, and the parties who caused the church to be excavated. This also accords with the historical era usually given when the conversion of Ethiopia took place. Frumentius was ordained the first bishop about the same time, having been instructed in the doctrines of the Greek church at Alexandria; and the fact of its being a perfect Greek church in its plan and arrangement confirms the reputed antiquity of its formation. If we are to rely upon these traditions, this must be one of the oldest Christian churches in the world. It dates nearly a thousand years before any of our cathedrals, and its excavation is contemporary with many of the rock-cut temples of western India.

The first glance at the plan of this church would lead an eye accustomed to Egyptian temples to the conclusion that it had been formed, like many of the more ancient, by excavating a recess in



Plan of the Rock-cut Church of Dongolo.

A. The nave or central Church of St. Kirkos. a, The Makdas or Sanctum. b, The Kudist. c, The Porch or Kuneh-Mahelet.

B. The Northern Aisle or Church of Mariam. d, The Makdas. e, The Kudist. f, The Kuneh-Mahelet.

C. The South Aisle or Church of Gabriel. g, The Makdas. h, The Kudist. i, The Kuneh-Mahelet.

J. The Stone Tabot or Altar. k, Dwarf wall separating the Makdas from the Kudist in the central Church.

D. Beatalehem or House of Bread.

the rock and then adding a built front to it. But such is not the case; the whole is cut from the solid rock. The rock has been rudely scarped into the desired form, but no architectural feature or ornament has been given on the external walls. It is curious to note that the Greek church has penetrated such a distance south into Africa, and so far north into Russia, carrying in each direction a similar style of architecture. Whoever is familiar with the Cathedral of the Assumption, the principal church of the Kremlin at Moscow, will perceive how identical it is in plan to this rock-cut church of Abyssinia. A description of the Moscow church, or of one of the usual styles of Greek churches in the East, would serve as a faithful account of the one under consideration. The main part of the edifice is a square building, which forms the body of the church. In some cases this is round inside, and in many round both inside and out. On the eastern end the altar or holy place is formed; this is narrower than the main part of the building, generally extending over about a third of the width, and is almost always at its east end circular or apse-like in plan. On each side of this altar rooms are formed, so as to fill up the space to the full breadth of the church. This addition to the east end makes the whole plan of the building into an oblong. At the western door a porch is generally added. Now this general description of a Byzantine church so exactly agrees with the one at

Dongolo that we may almost take it for granted that it was erected under the superintendence of a Greek architect.

I shall now describe in detail some points of the church. The main body of it is a square of about thirty-six feet, and about fifteen feet high. The roof is supported by ten pillars, the four central being much larger than the others. There is a strange irregularity in the position of these four central supports, which, if it was not intended to avoid some flaw in the rock, indicates great want of care in the workmen. These pillars are square, the corners only being taken off. They stand upon a square base, and the capitals are massive blocks, spreading outward on the top. The four larger central ones may perhaps be best described by saying that they are as if four pilasters were joined together. From their capitals arches spring; there are also arches between the two eastern pillars and the pilasters on each side of the entrance to the altar. This entrance is also arched, and the apse is vaulted, as well as the central nave from the porch to the central pillars. There is a central pillar in the porch. There are three doors, now, however, bricked up into much less space than their original dimensions. The church must have been rather dark, and two large windows were pierced in the sides, which are now filled up. The two apartments on each side of the altar were so filled up with rubbish that it is hard to say much about them. A story was told of some one having been buried there, and also that during one of their frequent wars the conquering party had committed the sacrilege of digging for treasure. Though in a rock-cut building this may seem rather hard to accomplish, yet the mass of rubbish which was in the darkness of the east end rendered this story not at all improbable. The only sculptural decorations were a Greek cross in relief high up on the right hand within the entrance from the porch, and a piece of frieze on the lower part of the vaulted portion of the roof. This frieze is most unlike what belongs to the Doric order, and yet I know of nothing else to which it could be compared. It might be described as a row of small pilasters, and a square panel between. The roof had been decorated with elaborate designs in colour, but now they are all so injured and blackened that their original appearance can scarcely be guessed at. The designs seem to have been crosses of various patterns, formed by lines intersecting one another, some of them in a very complicated way. One of the designs was very simple, and formed a beautiful decoration. It was formed of two sets of lines, which produced squares at every intersection, and it is a curious fact that the very same pattern is to be found on the cover of the bell of S. Patrick (see Westwood's Anglo-Saxon Ornaments.)

Such is a rough description of the church in its original form; but I have now to describe the changes which it has undergone. At the entrance to the Sanctuary a small dwarf wall is built, with a door in it for passing to the altar. Of course being built it forms no part of the original plan of the church. This is confirmed by the very different style of the architecture, for a Saracenic arch surmounts this door, and is elaborately decorated with an ornament repeated all over it. Luckily I took a careful sketch of this, and it turns out to be a Kufic inscription, in an ornamental character. On being submitted to Dr. Rieu of the British Museum, he translated it as either *El-Malik*, "The King," or *El-Mulk*, "The Kingdom." He also gave it as his opinion that it belongs to the 11th century. The very great change indicated in this arch from the original style of the church, and its very early date, is a still further confirmation of the great antiquity of the church itself. A Saracenic arch in a Christian Church in Abyssinia is a point of some importance; unfortunately I did not see enough of the architecture of the country to enable me to speak with certainty on the matter; but from what I did see, and so far as I have examined drawings in books, I have come across nothing of the kind elsewhere. It has been suggested that the Mahomedans may have had possession of this church for a time, and used it as a mosque. This is not impossible, for it is not, even at the present day, far from the boundary of a Mahomedan population; and the orientation of a church in that latitude would be near

enough in its direction to Mecca to serve the purpose of a house of prayer. So that the apse with its arch may have become the mihrab or niche pointing to the Kibla.

I have another change in the history of this rock-cut building to describe, in which the facts of the case are founded on much clearer and more satisfactory evidence. Though it is now used as a place of worship, the Abyssinian priesthood have made a new and arbitrary arrangement of its parts, quite different from the original conception. In the first place they have divided it into three churches. The central nave with the apse is the principal church dedicated to St. Kirkos, and the side aisles, each with a square room as the sanctum at the end, are dedicated, that on the south to Kadosh Gabriel, and the other, on the north, to Miriam or the Virgin. The Greek Church had got the idea of the three-fold division in imitation of the Temple and the Tabernacle. The body of the church is considered to be the same as the second court, the bema or apse is equivalent to the Holy of Holies, and the porch stands for the outer or third court. This could not be preserved by the Abyssinians in the new arrangement except in the central portion, and there, to a certain extent, the original Greek idea was retained. The porch was still the outer court, and a rude wall was raised between two of the central pillars, the door in this wall being the entrance to the makdas or Sanctuary. A piece of dirty cloth served the purpose of a veil at this place, and a square stone erection within the Ark was the Tabot. The division of the aisles was again different, the square room at the end was the altar, and the aisle was supposed to have an imaginary division in the centre separating the second from the third court. By this arrangement the courts in the side churches are not parallel with the corresponding courts of the central one. A small cave in the rock on the outside to the north is the beatalehem or House of Bread. This I should be inclined to think was also an adaptation to the requirements of the place as an Abyssinian church, for it is a mere hole in the rock, showing none of the architectural features of the original church in its construction.

There are many rock-cut churches in Abyssinia. There is one not far from the route of the expedition on the Takazze, excavated by Lalibela in the 10th century. Salt, in his work, gives the plan of one called the Church of Abha Os Gaba, or Abhahasuba, near Chelicut. It may be said to be identical with the Dongolo one, with this exception, that the body of the church is elongated and not square. Salt also copies from the work of Father Alvarez the plan of the church of Dummuda Miriam. As this plan is not very carefully done, we cannot speak with certainty about it, but it conveys the idea of a monolithic structure, similar to the Kylas at Ellora. There is a house in front as well as one on each side, all forming a very good design, and implying a vast deal of work. There are other rock-cut churches known by the name of St. Emanuel, St. Saviour's, St. Mary, The Holy Cross, St. George, Golgotha, Bethlehem, The Martyrs, Marcoreos, &c.

After this description of the churches of Abyssinia, which I believe include the main types of construction, we are in a position to say something upon the origin of the architecture of the country. I would give it as the most probable conclusion, first, that the rock-cut church of Dongolo represents the pure Greek type introduced by the first missionaries from Alexandria; secondly, that the round Amharic church represents a pre-existing Jewish or Pagan type; and, thirdly, that the various square churches of Northern Abyssinia are the result of this pre-existing form, more or less inflenced by the Greek. When the missionaries first got a footing in the country, and began to build places of worship, they would no doubt construct them according to the style to which they had been accustomed. The rock-cut specimen at Dongolo is a palpable proof of this. However, as they penetrated into the country, and conversions became numerous, they would not be able to form a new church at every locality. Nor would that be necessary; they would do there what has been often done in other countries upon a change of faith; they would seize upon the already existing temple, and re-consecrate it in keeping with the new

worship. Perhaps there might sometimes be needed some slight internal alteration expressive of the new faith; but, on the other hand, the former faith, as it seems to have been very strongly impregnated with Jewish ideas, may have had temples which scarcely required a change of adaptation. There are, at the present day, a numerous Jewish population in Abyssinia, known by the name of *Falashas*. Their temples are constructed exactly like the round Amharic churches, in three divisions; but with this difference that the principal entrance is towards the east. They have also an upright stone at the back of the building, on which the Pascal lamb is slaughtered.

To convert such a building to Christian worship would be easy. A piece of matting as a covering on the eastern door, while a few minutes with a sword or a hatchet would soon open an entrance from the west. A preacher who could fire his hearers with an impulse might have such churches converted as soon as the congregations. The stone altar on the outside might be destroyed or forgotten. When the church had to be repaired or rebuilt, unless the people had seen another style they would only repeat the former construction. Thus we find that in the southern parts of Abyssinia, where a new manner of architecture did not penetrate, we have the round church as the existing style of building. If we accept the idea that this round style is the primitive African manner of building, and found all over the interior of that continent in various stages of barbarism, it becomes an additional reason for regarding the square northern style as an innovation. This innovating style represented a higher development of civilization, under the wing of a new and prosletising faith, which spread along the Nile and expended itself against the barbarism of a continent on the mountains of Habesh. The line where this wave broke is clearly defined by the mixed northern buildings. The Abyssinians give the etymology of their name as meaning "mixed." They are of Arabic stock, but are supposed to have intermingled with the more primitive races around them. This mixing of a Shemitic with a Hamitic blood is only the co-relative fact in ethnology with that which has been described in their architecture, and there need be little doubt that both are the result of the same geographical or climatic causes. This subject is an important one, for it bears upon an old question, whether the civilization of Egypt went up or came down the Nile, involving also the problem as to where the wonderful architecture of that country had its origin. Did it begin in Memphis or Thebes, and go upwards to the source of the river, or was its first birth in the rock-cut shrines of the south? The architecture of Abyssinia certainly bears upon the answer to these questions, and I can only express my regret that I had no wider opportunities than that permitted by the march of an army, for collecting information and throwing light on the subject.

The plan of the Focado church is now easily understood; the three chambers behind the altar are clearly the retention of the apse and side rooms of the Greek arrangement. As the tabot was not in this most easterly portion of the building, it shows that the form was retained without the function which belonged to it. They told me that the priests used it for putting on their vestments; but no Abyssinian church has such an arrangement. They always robe themselves in the Holy of Holies; similar is the custom in the Greco-Russian Church, indicating another Greek form retained by the Abyssinians in the north.

At Agoola, one march south of Dongolo, there are the ruins of a stone-built church. Possibly a town may have been here, but at present the remains of the church is all that is to be seen. A basin had been dug in the earth, in which the building had been erected. The result is a deep broad fosse all round, suggesting that defence had been one of the objects of this mode of digging a foundation. A massive base of tolerably well hewn stones had been raised up to the original level of the ground, and on this the church stood. Only two central piers remain, and the bases of some columns. The plan is not quite distinct, but I should say that it must have been very near to that of the Focado Church. Some one

mentioned that it was an old Greek church, but a flight of steps to the "women's door" on the south, and the debris of a built platform across the fosse towards the north-east corner, indicated to me the passage from the Beatalehem into the sanctuary, and I came to the conclusion that it was only a Greek church in the sense that all the churches of Northern Abyssinia are more or less so. There had been a fine flight of steps leading up to the front or western door. The pillars were square with the corners cut off like those at Dongolo, and the capitals also resembled in shape those at that place; only one remains, lying in two pieces on the ground, with some carved ornament upon it; but I did not see enough of the sculpture or ornament of the country to be able to judge of its probable age.

From the descriptions which I got of the sacred church at Axum, I think it must be somewhat in the style of this one at Agoola. It is square, or rather oblong, and stands on a platform built of stone, with a great flight of steps. Into its Holy of Holies no one is permitted to go, with the exception of the Abuna. This is on account of their curious tradition that the real Ark of the Covenant was brought from Jerusalem by the priests who returned with Menelik. Instant death is said to have on more than one occasion been the fate of the daring intruders who ventured within. The Governor of Axum is called the "Keeper of the Ark" as one of his titles of dignity to this day. This church has been often rebuilt. Nonnosus, an ambassador sent by Justinian to Ethiopia, mentions the ruins of a Christian temple at Axum, and it is curious to find the church in ruins at that early date. The same authority also states that there were sixteen or seventeen obelisks standing at this period, whereas now there is only one erect.

In the smaller churches, the mud walls of the sanctuary, and the rude posts with twigs interlaced of the other divisions, will be enough to explain that ornamentation was not necessary nor to be expected in such primitive buildings. But in some of the more important and better constructed churches, a lavish expenditure of mural painting is to be found. Such is the case in the Addigerat Church, and the same in the one at Chelicut. In the latter there was some wood carving, which they pointed out to me with manifestations of pride. In these two places the outer square walls of the Holy of Holies were quite covered with pictures, painted in bright colours. The favourite subjects are the Crucifixion, Virgin and Child, St. George and the Dragon, Satan, and all the saints and martyrs. Not only is the devil included in their calendar, but Pontius Pilate and his wife, Balaam and his ass, Samson and his jaw-bone, figure on many of their walls in a way that we are unaccustomed to in European art. Moses and the Patriarchs are represented with a processional cross in their hands, similar to those used in Abyssinia at the present day; and the Philistines, as well as Pharaoh's hosts, are represented with muskets such as have long been common in the country. In the pictures of the Crucifixion, the scroll on the top of the cross always contains the inscription INRI in Roman, and not in the Amharic letter. This would indicate—and many other illustrations could be given—that art had filtered up through the schools of Alexandria. The rule which is so well known in the modern Greco-Russian Church of having no figure in relief, is also strictly adhered to in Abyssinan decorations.

On visiting the church at Chelicut, which was the most important one on the route of the Expedition, we saw among the priests' vestments, which were brought out and exhibited, two mitres, seemingly gold, or perhaps gilt. One was square in the lower portion, and the other round; but in both cases it was evident that they were meant to represent the main body of a Greek church, the dome forming the principal part of the covering for the head. They were ornamented in an elaborate manner; having arched panels like flat niches with saints engraved upon them, and surmounted by very rich crosses.

The port of Adulis was long celebrated as the outlet for the commerce of Northern Africa. It belonged to the kings of Ethiopia. The Bahar-Negus, or King of the Sea, was then a title with a function, as his fleet swept the Erythrean Sea. Here the Queen of Sheba is supposed to have embarked

on her visit to Solomon. Justinian's envoy, Nonnosus, went to Abyssinia by this route, and reports that he saw 5,000 wild elephants on his way. It is curious that these animals should seem so strange to the people in the present day, when they were so plentiful in former times, and indeed they had so prominent a place in warfare at one time, as to give to one campaign the name of the "War of the Elephants." By a common change of sounds, the word Adulis has gone through a mutation to Dula and then to Zoulla, a name which must be familiar to all as the place where the late Expedition landed. The site of this ancient city was known, and the many rude heaps about three miles north of our place of embarkation was all that indicated the departed greatness of this celebrated naval port. The Commander-in-Chief appointed Captain Goodfellow, of the Engineers, and a party of the Native Bombay Sappers to explore the place. Numerous trenches were made, and many fragments of alabaster and marble, with other relics, were brought to light. At last, remains of what was either a temple or a church were found. Some large stones were exposed, forming the lower course of a wall, in front of which was a piece of paving formed of irregular slabs. Extending at right angles were the bases of two rows of pillars, with many blocks of the pillars themselves among the debris, and at last, at the east end the foundation of a circular apse appeared, with a curious piece of marble paving within it. The peculiar feature of this was a groove hollowed out all along its outer edge, suggesting the idea that it may have been intended for a gutter. While there were still doubts as to the real character of this temple a discovery seemed to settle the question; a fragment of marble was found close to this apse with a very well cut Greek cross upon it, and it was then agreed that it was in all probability a Christian church, and no doubt a very early one. The pillars were of a coarse, volcanic-like stone, square in plan, with the corners cut off exactly the same as those at Dongolo and Agoola, thus indicating the same style of architecture. Lord Napier was anxious to have made further explorations on this ancient and interesting locality, but time would not permit.

Plan of Ancient Church at Adulis.—A, Paving at Apse, with grove or gutter around its margin. B, Wall. C, Paving.

I heard the idea expressed in Abyssinia, that the round church founded on the model of the round house, so peculiar to almost the whole of Africa, is the true Semitic form of construction, and is the real origin of the round plan of all temples. I cannot say that I feel inclined to adopt this theory, but in a paper of this kind the suggestion is worthy of notice, because, although perhaps not altogether a correct expression of the truth, it contains something worth remembering. The term *Semitic* is very vague, and particularly so when it is, as in this case, used to include all the descendants of Ham. It is rather against the theory, when we recall the fact, that the Hebrews, who are the great representatives of the Semitic race, neither constructed a round tabernacle, nor a round temple. It is also a remarkable feature of the Egyptian temples that the circular form is unknown. Still this very ancient plan of construction may have grown out of an equally primitive round hut as the Abyssinian one in some other quarter of the globe. The accidents of climate and material, added to the necessities of construction, would produce the form; and whatever ideas of symbolism may be attached to this particular shape, their growth would take place afterwards. Abyssinia clearly illustrates the fact that the construction of the

church is founded upon the building of the house, and there is no reason to suppose that this process was confined to the continent of Africa. On Palm Sunday of last year I saw at Adigerat, the priests and people with book, cross, incense, bell, and palms in their hands circumambulate the outside of the church. In the consecration of the elements, the officiating priests, deacons, &c., go three times round the tabot, or altar, at the end of every chapter of the service, and this is done with the cross and incense, accompanied by a peculiar slow step, which is explained by some as being in imitation of David dancing round the Ark. Ignorance of the language prevented me from learning what ideas they associated with this particular ceremony; but little doubt was left in my own mind that the Abyssinian of to-day was only repeating a form which had come down to him from a far antiquity, as the circumambulating of the Caaba had come down from a period long anterior to the time of Mahomet. The Buddhists of India had the same ceremony round the Dagopa or Tope, and the Celts of Britain when they performed Deisul, and went sun-wise round their circles of stones. This form of planetary cultе, although unknown as such, still remains in Abyssinia. It was common to the whole ancient world, and the round temple no doubt has some relation to this worship, but the architecture under consideration would indicate that the construction and the symbolic characters were not of simultaneous birth.

Since writing the above, Mr. Fergusson has pointed out to me the plan of a church in his 'History of Architecture,' at D'jemilah in Algeria, in which the holy place, instead of being in an apse, as it usually is in Greek churches, is a square within the building almost identical with the plan of the Adigerat church. It is very difficult to account for such an exceptional form of an eastern church; we cannot conceive of any Abyssinian influence here, particularly as this building is supposed to date before the time of Constantine, and consequently before the conversion of Abyssinia. Our cathedrals, such as Canterbury, and churches such as St. George's, Windsor, have often got the chancel as an inner enclosure; but then they are never in the shape of a formal square. The old church in Rome, of St. Clementi, although a basilica, has the place for the priests in the centre, still it cannot be identified with the plan at D'jemilah. The modern Jewish synagogue, with its *amud* for the readers of the services, is perhaps the nearest approach to this evidently old form; but then in this case the amud is open and not enclosed, which is a marked distinction.

A recent visit to Cairo since this paper was written has enabled me to inspect the church of the Coptic patriarch there, and the Coptic convent at old Cairo; and I add a word or two upon them, as they may throw light on the Abyssinian churches. The Patriarchal Church, which is quite a new erection, is built in the Greek style, that is, with three apses at the east, each being intended for an altar. The church is not square, but oblong, with an oval dome over its centre. The women's place is in a gallery above, which runs along each side. The two churches in the Coptic convent are very ancient, and interesting from the remains of old marble pillars, and the beautiful arabesque wood-carving in the screens. In plan they have each the three altars at the end. They are both elongated, and not square in the body of the church. I asked one of the priests if they understood the three-fold division to exist in these churches, and this he answered in the affirmative; with this additional fact, that the divisional character was understood in these churches as existing in a longitudinal, as well as in the latitudinal direction;—that in fact there were nine divisions or courts in each. This may be more clearly stated in another way—viz. that each altar belongs to a church with a three-fold arrangement of places before it. As this agrees so exactly with the description given to me of the Dongolo church, I consider it to be a very valuable addition to the facts already given in this paper.

The President said the thanks of the Institute were eminently due to Mr. Simpson for an interesting and remarkable paper on a subject new to most of them, and to his excellent friend Professor

Donaldson, with regard to whom he would remark that the wonder was that in a journey of such extent and under the difficulties he had spoken of, he could have done so much as he had. It was, however, characteristic of his great energy of purpose and his earnest desire to collect matters of interest for their instruction and entertainment.

The votes of thanks were unanimously accorded, and the proceedings of the session were brought to a close.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

Incorporated in the Seventh Year of William IV.

PATRONESS—HER MOST GRACIOUS MAJESTY THE QUEEN.
PATRON—HIS ROYAL HIGHNESS THE PRINCE OF WALES, K.G., &c.

LIST OF THE MEMBERS;

CONTRIBUTIONS TO THE COLLECTION AND LIBRARY;

PROCEEDINGS AT THE ORDINARY AND OTHER GENERAL MEETINGS, PAPERS READ, &c.

USUI CIVIUM, DECORI URBIUM.

LONDON:

PUBLISHED AT THE ROOMS OF THE INSTITUTE, 9, CONDUIT STREET, HANOVER SQUARE, W.

1869.

LONDON:

J. DAVY AND SONS, PRINTERS, 137, LONG ACRE.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

PATRONESS—HER MOST GRACIOUS MAJESTY THE QUEEN.
PATRON—HIS ROYAL HIGHNESS THE PRINCE OF WALES, K.G., &c.

LIST OF OFFICE BEARERS,
1869.

COUNCIL.

President.

SIR WILLIAM TITE, M.P., F.R.S., F.S.A.

Vice-Presidents.

CHARLES BARRY. JOSEPH CLARKE, F.S.A. EDWARD I'ANSON.

Honorary Secretaries.

Foreign Correspondence.
T. L. DONALDSON, Past President.

Home Duties.
JOHN P. SEDDON.

Ordinary Members of Council.

A. W. BLOMFIELD, M.A.
E. CHRISTIAN.
H. CURREY.
J. EDMESTON.
C. FOWLER.
E. W. GODWIN, F.S.A.
J. H. HAKEWILL.
C. F. HAYWARD, F.S.A.
F. MARRABLE.
C. C. NELSON, F.S.A.
J. L. PEARSON, F.S.A.
T. ROGER-SMITH.

Country Members.

DAVID BRYCE.
R. J. JOHNSON.
T. WORTHINGTON.

Auditors.

T. E. KNIGHTLEY, Fellow. R. PHÈNÉ SPIERS, Associate.

Hon. Treasurer and Banker.

SIR W. R. FARQUHAR, Bart., 16, St. James's Street.

Honorary Solicitor.

F. OUVRY, 12, Queen Anne Street, Cavendish Square.

Assistant Secretary.

CHARLES L. EASTLAKE, Fellow, 9, Conduit Street, Hanover Square.

Librarian.

S. W. KERSHAW, M.A., 9, Conduit Street, Hanover Square.

Clerk.

EDWARD FREEMAN, 9, Conduit Street, Hanover Square.

(Corrected to 1st September, 1869.)

FELLOWS.

(D) Those who have been donors to the Funds or Collection to the amount of Five Pounds and upwards.
† Those who have been or are Vice Presidents. * Past or present Members of the Council.
(L) Life Members.

ELECTED. ASSOCIATE.	ELECTED. FELLOW.		
	1862	(L)	AITCHISON, G., Muscovy Court, Trinity Square, E.C.
	1840	(L)	*ALEXANDER, GEORGE, F.S.A., Westrop House, Highworth, Wilts.
1851	1869		ALLOM, ARTHUR, 5, Parliament Street, S.W.
1835	1860		ALLOM, THOMAS, 1, Lonsdale Road, Barnes, Surrey, S.W.
1864	1868		ANDERSON, J. MC VICAR, 2 Norfolk Crescent, W.
	1864		ANGELL, LEWIS, Rokeby House, Stratford, E.
	1861		APPLETON, EDWARD, Torquay.
	1868		ARTHUR, O. C., Plymouth.
	1844		†*ASHTON, HENRY, 23, Palace Gardens Terrace, Kensington, W.
	1851	(L)	AUSTIN, HENRY G., Canterbury.
	1855		*BAKER, HENRY, 108, Gower Street, W.C.
1847	1869		BANKS, R. RICHARDSON, 1, Westminster Chambers, Victoria Street, S.W.
	1862		BARNES, FREDERICK, Ipswich.
1846	1854	(L)	†*BARRY, CHARLES, 1, Westminster Chambers, Victoria Street, S.W.
1855	1860	(L)	*BARRY, EDWARD M., R.A., 21, Abingdon Street, Westminster, S.W.
1858	1869		BARTLEET, WM. G., Pinners Hall, Old Broad Street, E.C.
1849	1869	(D)	BAXTER, R. C., 21, Abchurch Lane, E.C.
	1856		BELCHER, JOHN, 5, Adelaide Place, London Bridge, E.C.
	1851		BELL, RICHARD, 22, Walbrook, City, E.C.
	1834	(D)	†*BELLAMY, THOMAS, 8, Charlotte Street, Bedford Square, W.C.
	1863		BILLING, ARTHUR, 185, Tooley Street, Southwark, S.E.
	1866		BINDON, JOHN, 5, Meridian Place, Clifton, Bristol.
	1867	(D)	*BLOMFIELD, A. W., M.A., 1, Henrietta Street, Cavendish Square, W.
	1857	(L)	BLOUNT, GILBERT R., 1, Montagu Place, Montagu Square, W.
	1835	(L)(D)	*BOOTH, W. J., Lisworney, Torquay; and 10, Bryanstone Street.
	1862	(L)	BOTHAM, JOHN R., Birmingham.
1848	1859		*BOULNOIS, W. A., 6A, Waterloo Place, Regent Street, S.W.
	1864		BOULT, JOSEPH, 16, Exchange Buildings West, Liverpool.
1839	1840	(D)	†*BRANDON, DAVID, F.S.A., 24, Berkeley Square, W.
	1860		*BRANDON, RAPHAEL, Clement's Inn, W.C.
	1860		BRODRICK, CUTHBERT, 11, Buckingham Street, W.C.; and Leeds.
	1866		BROOKS, JAMES, 11, Serle Street, Lincoln's Inn, W.C.
	1867		BROWNE, R. P., Royal Hill, Greenwich, S.E.
1855	1861		BRUTON, EDWARD G., 39B, St. Giles's Street, Oxford.
	1845	(L)	*BRYCE, DAVID, R.S.A., 131, George Street, Edinburgh.
	1860	(L)	*BURGES, WILLIAM, 15, Buckingham Street, Strand, W.C.
	1835	(L)(D)	*BURN, WILLIAM, 6, Stratton Street, Piccadilly, W.
	1834	(L)(D)	†*BURTON, DECIMUS, F.R.S., F.S.A., 37, Gloucester Gardens, Hyde Park, W.

ELECTED. ASSOCIATE.	FELLOW.		
1839	1843		*Bury, T. Talbot, F.S.A., 50, Welbeck Street, W.
1842	1860		Butcher, Louis George, 102, Guildford Street, Russell Sq., W.C.
1854	1867		Capes, S. C., 30, Bedford Row, W.C.
	1861		*Chamberlain, John H., Christ Church Buildings, Birmingham.
1851	1865		Chambers, Francis, 15, Bow Lane, Cannon Street, E.C.
	1867		Charlesworth, John, 3, Princes Street, Manchester.
	1863	(L)	Chatwin, Julius A., 20, Temple Street, Birmingham.
	1863		Cheston, Chester, Manor House, Hackney, N.E.
1840	1850		†*Christian, Ewan, 8A, Whitehall Place, S.W.
	1867		Clarke, George Row, 27, Gt. James Street, Bedford Row, W.C.
1845	1859	(D)	*Clarke, G. Somers, 20, Cockspur Street, S.W.
1841	1853		†*Clarke, Joseph, F.S.A., 13, Stratford Place, Oxford Street, W.
1855	1862	(L)	Clarke, Thomas C., 63, Bishopsgate Street Within, E.C.
1838	1850		*Clutton, Henry, 9, Whitehall Place, S.W.
	1854		*Clutton, Henry, 9, New Burlington Street, W.
	1857		Cobbett, Daniel Addington, 57, Fenchurch Street, City, E.C.
1860	1864		*Cockerell, Frederick Pepys, 18, Manchester Square, W.
1841	1848		*Cole, John J., F.R.A.S., Stock Exchange, New Court, Throgmorton Street, E.C.
1856	1860		Colling, James K., 150, Hampstead Road, N.W.
	1858		Colson, John, Winchester.
	1863		Cooke, Charles H., 11, John Street, Bedford Row, W.C.
	1867		Crossland, W. H., 25, Park Square, Leeds.
	1857		Cundy, Thomas, 12, Eccleston Square, Pimlico, S.W.
1848	1856		*Currey, Henry, 37, Norfolk Street, Strand, W.C.
	1856		Darbishire, Henry A., 4, Trafalgar Square, S.W.
1859	1869		Dawson, Henry, 16, Finsbury Place South, E.C.
	1863		Deane, T. N., 3, Upper Merrion Street, Dublin.
	1856		Devey, George, 16, Great Marlborough Street, W.
	1834	(L)(D)	†*Donaldson, Thomas Leverton, Emeritus Professor of Architecture, 21, Upper Bedford Place, Russell Square, W.C.; Past President R.I.B.A., Honorary Secretary for Foreign Correspondence.
	1869		Eastlake, Charles L., Assistant Secretary, 6, Upper Berkeley Street West, Hyde Park, W.
1862	1867		Edis, R. W., 4, Osnaburgh Terrace, Regent's Park, N.W.
1856	1859		*Edmeston, James, 5, Crown Court, Old Broad Street, E.C.
1857	1861	(L)	Edwards, Francis, 10, John Street, Adelphi, W.C.
	1854		Elkington, George, 95, Cannon Street, City, E.C.
	1866		Fawcett, William Milner, 32, Trumpington Street, Cambridge.
1849	1859	(L)(D)	†*Fergusson, James, F.R.S., 20, Langham Place, W.
	1839		†*Ferrey, Benjamin, F.S.A., 1, Trinity Place, Charing Cross, S.W.
	1868		Fogerty, Wm., 23, Harcourt Street, Dublin.
	1865		Foster, John, 6, Park Street, Bristol.
1851	1862	(L)	*Fowler, Charles, 14, Buckingham Street, W.C.
	1864		Fowler, James, Louth, Lincolnshire.
1841	1857		*Francis, F. J., 38, Upper Bedford Place, Russell Square, W.C.

ELECTED. ASSOCIATE.	FELLOW.	
1863	1869	Frere, Augustus, 22, Henrietta Street, Covent Garden, W.C.
	1838	Fulljames, Thomas, Barton Street, Gloucester.
1857	1861	Gale, Joseph, 150, Bermondsey Street, S.E.
	1848 (L)(D)	*Garling, Henry, Southborough Hall, Tunbridge Wells.
1843	1857	Garling, H. B., 7, Bedford Row, W.C.
1849	1853 (L)	*Gibson, John, 13, Great Queen Street, Westminster, S.W.
	1854	Gilbert, Alfred, South Bank, Grote's Buildings, Blackheath, S.E.
	1854 (L)	Gill, J. E., 1, Fountain Buildings, Bath.
	1863	*Godwin, E. W., F.S.A., 197, Albany Street, Regent's Park, N.W.
1836	1841 (D)	†*Godwin, George, F.R.S., F.S.A., 24, Alexander Square, Brompton, S.W.
	1860	Godwin, Sidney, 24, Alexander Square, Brompton, S.W.
1840	1847 (L)(D)	*Good, J. H., 75, Hatton Garden, E.C.
	1860	Gray, Charles, 5, Parliament Street, S.W.
	1866	Green, James, Portsmouth House, Todmorden, Burnley.
	1842	Griffith, John, 16, Finsbury Place South, E.C.
	1847	Griffith, W. P., F.S.A., 16, Guildford Street, Russell Square, W.C.
	1835 (L)(D)	*Gutch, George, 24, Porteus Road, Paddington, W.
1852	1860 (L)	Habershon, Edward, 37, Bedford Place, Russell Square, W.C.
	1852	Habershon, W. G., 38, Bloomsbury Square, W.C.
1835	1847	*Hadfield, Matthew Ellison, Knowl House, Sheffield.
1838	1854	*Hakewill, E. C., 5, South Molton Street, W.
	1842	*Hakewill, J. H., 5, South Molton Street, W.
1848	1860	*Hansard, Octavius, 8, Argyll Place, Regent Street, W.
	1865	Hansom, Charles F., Clifton, Bristol.
	1834 (L)(D)	†*Hardwick, Philip, R.A., F.R.S., F.S.A., 21, Cavendish Square, W.
	1850 (L)	*Hardwick, Philip Charles, F.S.A., 21, Cavendish Square, W.
1851	1869	Harris, Thomas, Gray's Inn Chambers, 20, High Holborn.
	1862	Haycock, Edward, Jun., Monkswell Terrace, Shrewsbury.
1855	1861 (L)	*Hayward, Charles Forster, F.S.A., 20, Montague Street, Russell Square, W.C.
	1857 (L)	*Haywood, William, Guildhall, City, E.C.
1838	1860	*Henman, Charles, Dingwall Road, Croydon, S.
	1849	*Hesketh, Robert, 7, Royal Exchange, City, E.C.
	1864	Hine, James, Plymouth.
1854	1861	Hirst, J. H., Bristol.
1838	1866	Hiscocks, Alfred Jas., Alfred Lodge, East Hill, Wandsworth, S.W.
1835	1847 (D)	Hopkins, J. D., 25, Bedford Square, W.C.
	1861	Hopkins, William J., Sansome Lodge, Worcester.
1848	1861	Howell, C. H., 3, Lancaster Place, Strand, W.C.
1856	1859 (L)	Humbert, A. J., 27, Fitzroy Square, W.
	1852	†*Hussey, R. C., F.S.A., 16, King William Street, Strand, W.C.
	1840 (L)	†*I'Anson, Edward, 7A, Laurence Pountney Hill, E.C.
	1835	†*Inman, W. S., 2, Powis Villas, Powis Square, Brighton.
	1868	Innes, Charles, 6, Whitehall Place, S.W.
	1847	*Jennings, Joseph, 11, Langham Street, W.
	1867	Jennings, N. E., 2, Queen's Road, Battersea.
1861	1865	*Johnson, Robert J., Newcastle-upon-Tyne.

ELECTED. ASSOCIATE.	FELLOW.		
	1868	(L)	Jones, George F., Botham, York.
1842	1858		*Jones, Horace, City Architect, Guildhall, E.C.
	1843	(D)	†*Jones, Owen, 9, Argyll Place, Regent Street, W.
1848	1868		Judge, George, Jun., 5, Frederick's Place, Gray's Inn Road, W.C.
1862	1869		Keirle, Robert, 1, Shorters Court, Throgmorton Street, E.C.
	1834	(D)	†*Kendall, H. E., 78, Dean Street, W.
1835	1842		*Kendall, H. E., Jun., 34, Burlington Road, Westbourne Park, W.
	1857		*Kerr, Robert, Professor of Architecture at King's College, London, 22, Old Burlington Street, W.
1856	1860		Knightley, T. E., 106, Cannon Street, City, E.C.
	1862	(L)	Knowles, George, Leeds Road, Bradford, Yorkshire.
	1847		*Knowles, James Thomas, 1, Raymond Buildings, Gray's Inn, W.C.
	1867		Laing, G. E., 1, Raymond Buildings, W.C.
	1864		†*Lanyon, Sir Charles, M.P., Dublin and Belfast.
	1863		Laver, A., Ottawa, Canada.
	1868		Law, Edmund F., Northampton.
1859	1864		Laws, Charles, 12, Doughty Street, W.C.
1863	1869		Lee, Sydney W., 3, Whitehall Place, S.W.
1845	1860		Lett, Frederick, 36, Essex Street, Strand, W.C.
1845	1852	(L)	†*Lewis, T. Hayter, F.S.A., Professor of Architecture at University College, London, 9, John Street, Adelphi, W.C.
	1866		Livesay, Augustus Frederick, Portsmouth.
1856	1860		Low, George, 10, Basinghall Street, City, E.C.
	1865		Lynn, William H., Belfast.
	1865		Mackison, William, Town Surveyor's Office, Police Chambers, Dundee.
	1842		*Mair, George J. J., F.S.A., 41, Upper Bedford Pl., Russell Sq., W.C.
	1856		Markham, S. S., The Birches, Kingston Hill, S.
	1856		*Marrable, Frederick, 21, Whitehall Place, S.W.
1851	1860		Martineau, E. H., 24, Lincoln's Inn Fields, W.C.
	1846	(L)	*Mayhew, Charles, 6, Chester Terrace, Regent's Park, N.W.
	1859		Mayhew, George W., 14, Argyll Street, Regent Street, W.
	1836	(D)	†*Mocatta, David, F.S.A., 32, Princes Gate, W.
1850	1856		*Morgan, George, The Thorne, Sidley, near Battle, Sussex.
1838	1850		*Moseley, Andrew, Trinity Chambers, Charing Cross, S.W.
1851	1867		Murray, James, 25, Portman Street, W.
1839	1849		*Mylne, R. W., F.R.S., F.S.A., 21, Whitehall Place, S.W.
1845	1859		*Nash, Edwin, 5, Adelaide Place, London Bridge, E.C.
	1843	(D)	†*Nelson, Charles C., F.S.A., 30, Hyde Park Gardens, W.
	1860		Newman, A. S., 185, Tooley Street, Southwark, S.E.
1853	1860		Newton, Harry R., 11, Argyll Place, W.
	1861	(L)	Nicholson, Thomas, Hereford.
	1835	(L)(D)	*Noble, James, Florence Villa, 2, Warwick Gardens East, W.
1850	1857	(L)(D)	*Norton, John, 24, Old Bond Street, W.
1849	1862	(L)	Oliver, Harry, 5, Queen's Gardens, Hyde Park, W.
	1866		Oliver, Thomas, 1, Ridley Place, Newcastle-on-Tyne.

ELECTED. ASSOCIATE.	ELECTED. FELLOW.		
	1865		ORDISH, FREDERICK W., Queenboro', near Syston, Leicestershire.
1841	1846	(L)(D)	*PAPWORTH, J. W., 13, Hart Street, Bloomsbury, W.C.
	1860	(L)	*PAPWORTH, WYATT, 13, Hart Street, Bloomsbury, W.C.
	1834	(D)	*PARKER, CHARLES, 75, Great Russell Street, W.C.
	1860		PARRIS, ROBERT, 61, Kennington Road, S.E.
	1861		PARSONS, HENRY, 20, Devonshire Road, South Lambeth, S.
	1867		PAULL, H. J., Manchester.
	1859		PAYNE, E. J., 1, Bennett's Hill, Birmingham.
1850	1859		*PEACOCK, JOSEPH, 15, Bloomsbury Square, W.C.
	1860		*PEARSON, JOHN L., F.S.A., 46, Harley Street, W.
	1840		*PENNETHORNE, JAMES, 7, Whitehall Yard, S.W.
	1865		PENNINGTON, NATHAN G., Bank Chambers, Essex Street, Manchester.
1846	1848		†*PENROSE, F. C., M.A., Cathedral Surveyor's Office, Chapter House, St. Paul's Church Yard, E.C.
1849	1861	(L)	*PENSON, R. KYRKE, F.S.A., Dinham House, Ludlow.
	1865		PERKIN, WILLIAM, East Parade, Leeds.
1860	1866		PHIPPS, CHARLES J., F.S.A., 26, Mecklenburg Square, W.C.
	1863		PHIPSON, A. B., 31, Cannon Street, Birmingham.
1850	1859	(L)	*PHIPSON, R. MAKILWAINE, F.S.A., Norwich.
	1864		PITE, A. R., 38, Bloomsbury Square, W.C.
1862	1869		PLUMBE, ROWLAND, 13, Fitzroy Square, W.
1837	1846	(L)	*POCOCK, WILLIAM W., 35, Craven Street, Strand, W.C.
	1867		PONTON, ARCHIBALD C., Athenæum Chambers, Bristol.
	1863		POPE, T. S. Jun., Guildhall Chambers, Bristol.
1856	1860	(L)	PORTER, ALFRED, Fort Place, Bermondsey, S.E.
1850	1855	(L)(D)	*PORTER, FREDERICK W., 16, Russell Square, W.C.
1857	1860	(L)	POWNALL, FREDERICK H., 30, Gower Street, Bedford Square, W.C.
1840	1843	(D)	*POWNALL, GEO., 5, Westminster Chambers, Victoria Street, S.W.
1861	1861		PRITCHETT, G. E., F.S.A., 32, Great St. Helens, Bishopsgate, E.C.
	1863		PRITCHETT, J. P., Darlington.
	1862		PUGIN, E. WELBY, Ramsgate; and 21, Saville Row, W.
	1861		PULLAN, RICHARD P., 15, Clifford's Inn, W.C.
	1862		RANDAL, J. L., Belton House, Shrewsbury.
1848	1860	(L)	REEKS, C. F., 12, Middle Scotland Yard, S.W.
	1863		REID, W. H., 22, Courtenay Street, Plymouth.
	1860		ROBERTS, EDWARD, F.S.A., 25, Parliament Street, S.W.
	1837	(L)(D)	*ROBERTS, HENRY, F.S.A., Villa Niccoline, Bella Squardo, Florence.
1853	1860		ROBINS, EDWARD C., 16, Southampton Street, Strand, W.C.
1858	1866		ROBINSON, FREDERICK J., 45, Friar Gate, Derby.
	1860		ROBINSON, G. T., 1, St. Peter's Square, Manchester.
1860	1864	(L)	ROBSON, EDWARD R., Town Hall, Liverpool.
	1845	(L)	*ROUMIEU, ROBERT L., 10, Lancaster Place, Strand, W.C.
	1868		ROSS, JOHN, Darlington.
1854	1856	(L) (D)	ROWE, R. R., F.S.A., 10, Emmanuel Street, Cambridge.
1851	1860		SALOMONS, EDWARD, 63, King Street, Manchester.
	1836	(D)	†*SALVIN, ANTHONY, F.S.A., Hawksfold, Fernhurst, Haslemere.
1850	1861		SALVIN, ANTHONY, Jun., 4, Adam Street, Adelphi, W.C.

ELECTED. ASSOCIATE.	FELLOW.		
1856	1869		SAUNDERS, GEORGE, 15, Hammersmith Terrace, Hammersmith, W.
	1866		SAUNDERS, JAMES EBENEZER, 9, Finsbury Circus, E C.
	1849		†*SCOTT, GEORGE GILBERT, R.A., F.S.A., 31, Spring Gardens, S.W.
1852	1860	(L)	*SEDDON, JOHN P., Honorary Secretary for Home Duties, 12, Park Street, Westminster, S.W.
	1848	(D)	SHARPE, EDMUND, The Higher Greaves, Lancaster.
	1836	(D)	*SHAW, JOHN, Christ's Hospital, City, E.C.
1849	1861	(D)	SIBLEY, R. L., 39, Great Ormond Street, W.C.
1855	1859		*SLATER, WILLIAM, Carlton Chambers, 4, Regent Street, S.W.
	1844	(D)	†*SMIRKE, SYDNEY, R.A., F.S.A., late Professor of Architecture at the Royal Academy, 80, Grosvenor Street, W.
	1866		SMITH, ALFRED LOUIS, Melbourne, Australia.
1856	1863		*SMITH, T. ROGER, 57, Strand, W.C.
	1868		SMITHER, JAMES G., *care of* G. W. Wheatley, & Co., 156, Leadenhall Street, E.C.
1840	1850	(L)	*SPENCER-BELL, JAMES, 1, Devonshire Place, Portland Place, W.
1837	1856	(D)	*ST. AUBYN, JAMES P., 2, Lambe's Buildings, Temple, E.C.
	1850		*STEVENS, I. H., 45, Friar Gate, Derby.
	1858		STEVENS, N. E., Cotswold Villa, Leonard Stanley, near Stonehouse, Glouecestershire.
	1857		STONE, COUTTS, 16, Great Marlborough Street, W.
	1859	(L)	†*STREET, GEORGE EDMUND, A.R.A., F.S.A., 51, Russell Square, W.C.;
1850	1861		STRIDE, LEWIS, 5, Bloomsbury Square, W.C.
1861	1869		STRONG, ALFRED, 8, St. Martin's Place, Trafalgar Square, W.C.
1861	1866		SUMNERS, HENRY, Rumford Court, Liverpool.
	1845		TARRING, JOHN, 23, Charles Street, Middlesex Hospital, W.
1835	1842		*TEULON, SAMUEL SANDERS, 9, Craig's Court, Charing Cross, S.W.
1854	1860		TEULON, WILLIAM MILFORD, 96, Wimpole Street, W.
1861	1866		THOMAS, R. G., Adelaide, South Australia.
	1862		THOMASON, YEOVILLE, 40, Bennett's Hill, Birmingham.
	1835		*THOMSON, JAMES, 57, Devonshire Street, Portland Place, W.
	1842	(D)	†*TITE, SIR WILLIAM, F.R.S., F.S.A., M.P., 42, Lowndes Square, S.W.; President R.I.B.A.
1862	1869		TOLLEY, JAMES, 13, Angel Court, E.C.
	1854		TRESS, RICHARD, 27, Queen Street, Cheapside, E.C.
	1860		TRUEFITT, GEORGE, 5, Bloomsbury Square, W.C.
	1868		VALE, H. H., Liverpool.
1838	1856	(D)	*VULLIAMY, G., Metropolitan Board of Works, Spring Gardens, S.W
	1856		WALLER, F. S., 4, College Green, Gloucester.
1843	1850	(L)	WARDELL, W. W., Inspector General of Public Works, Melbourne, Australia.
1845	1860		*WARING, J. B., 177, Piccadilly, W.
	1861		*WATERHOUSE, ALFRED, 8, New Cavendish Street, Portland Place, W.
	1867		WHEELER, GERVASE, 32, Cambridge Road, Kilburn, N.W.
1844	1850		*WHICHCORD, JOHN, F.S.A., 16, Walbrook, City, E.C.
	1859	(L)	*WHITE, WILLIAM, F.S.A., 30A, Wimpole Street, W.

ELECTED. ASSOCIATE.	FELLOW.	
1864	1868	White, W. H., Rue de Ponthieu, Paris.
1854	1857	Wigginton, W., County Chambers, Cornhill, E.C.
1848	1856	*Williams, G. B., 4½, Frederick's Place, Old Jewry, E.C.
	1864	Withers, Robert J., 51, Doughty Street, W.C.
1841	1847	*Wood, Sancton, 3, Cannon Row, Parliament Street, S.W.
1839	1846	*Woodthorpe, Edmund, 46, Moorgate Street, City, E.C.
	1865	*Worthington, Thomas, 110, King Street, Manchester.
	1864	Wray, Christopher Geo., 46, Moorgate Street, E.C.
1849	1854	†*Wyatt, Sir M. Digby, f.s.a., 37, Tavistock Place, Tavistock Square, W.C.
	1839	†*Wyatt, Thomas H., 77, Great Russell Street, Bloomsbury, W.C.

HONORARY FELLOWS.*

ELECTED.		
1835		Morrison, Charles, 96, Harley Street, W.
1850	(d)	*Beresford-Hope, Alexander J. B., m.p., ll.d., d.c.l., f.s.a., Past President r.i.b.a., Arklow House, Connaught Place, W.
1860		Grey and Ripon, the Right Hon. the Earl de, Carlton Gardens, S.W.
1865		Akroyd, Edward, m.p., Bank Field, Halifax.
1865		Buxton, Charles, m.p., Foxwarren, Surrey.
1865		James, Sir Walter C., Bart., 6, Whitehall Gardens, S.W.
1865		Maxwell, Sir William Stirling, m.p., 128, Park Street, Grosvenor Square, W.
1865		Ruskin, John, m.a., Denmark Hill, Camberwell, S.
1866		Austen, Francis, Broadford House, Horsmonden, Kent.
1866		Dufferin, the Right Hon. Lord, k.c.b., 8, Grosvenor Square, W.
1866		Grosvenor, the Right Hon. the Earl, m.p., Calveley Park, Cheshire.
1866		Powell, Francis Sharp, m.p., 1, Cambridge Square, Hyde Park, W.

HONORARY MEMBERS.

1868		Ansted, Professor D. T., m.a., f.r.s., f.r.g.s., 33, Brunswick Square, W.C.
1839		Burgess, the Rev. Richard, b.d., 69, Cadogan Place, S.W.
1863		Freeman, E. A., Somerleaze, near Wells, Somerset.
1850		Layard, the Right Hon. Austen Henry, m.p., d.c.l., Athenæum Club, S.W.
1862		Parker, John Henry, f.s.a., Oxford.
1865		Parry, T. Gambier, Highnam Court, Gloucestershire.
1857		Shaw, Henry, f.s.a., 103, Southampton Row, W.C.
1838	(d)	Wilkinson, Sir Gardner, f.r.s., Brynfield House, Gower, Swansea.
1835		Willis, the Rev. R., m.a., f.r.s., 23, York Terrace, Regent's Park, N.W.

---

* *The* Honorary Fellows *of the R. I. B. A. are here placed in order according to the date of their election.*

HONORARY AND CORRESPONDING MEMBERS.

FRANCE:—

ELECTED.				
1840	Felix Duban	Members of the Institute of France.	Architects	*Paris.*
1846	J. B. Lesueur			
1855	E. J. Gilbert			
1857	H. M. Lefuel			
1867	V. Baltard			
1867	L. J. Duc			
1868	H. Labrouste			
1868	L. Vaudoyer			
1863	(d) Charles Texier (*Royal Gold Medal*)			
1844	(d) César Daly, 6, Rue Sorbonne		Architects	*Paris.*
1855	Alfred Armand			
1855	——— Pellechet			
1855	Rohault de Fleury			
1856	(d) Viollet le Duc (*Royal Gold Medal*)			
1867	A. N. Bailly			
1867	Chas. Garnier			
1865	Le Comte Melchior de Vogüé, Archæologist			*Paris.*
1842	(d) Pascal Coste, Architect			*Marseilles.*
1846	(d) Girault de Prangey, Archæologist			*Plombières (Vosges).*
1847	Firmin Epellet, Architect of the Department of the Pas de Calais			*Arras.*
1848	N. de Caumont, Archæologist			*Caen.*
1853	——— Benvignat, Architect			*Lille.*
1855	——— Chenavard, Architect			*Lyon.*
1855	Prosper Morey, Architect			*Nancy.*
1856	Hippolyte Durand, Architect			*Tarbes, Hautes Pyrannées.*
1865	Henri Revoil			*Nismes.*

GERMANY.—

1842	Professor Heinrich Strack, Architect, Royal Academy of Public Constructions		*Berlin.*
1850	——— Busse, Architect, Director of ditto		
1850	(d) Wilhelm Zahn, Architect ,,		
1861	(d) Professor C. R. Lepsius, Archæologist (*Royal Gold Medal*)		
1851	T. Stein, Architect		*Aix la Chapelle.*
1837	——— Laves, Architect		*Hanover.*
1838	Professor F. N. Hessemer	Architects	*Frankfort on the Maine.*
1842	Friedrich Peipers		
1848	F. Lange, Architect		*Fulda, Hesse Cassel.*

GERMANY—*continued.*

ELECTED.		
1851	T. Stein, Architect - - -	.....
1857	——— Wiegmann, Architect - -	*Düsseldorf.*
1865	Auguste Reichensperger, Architect - -	*Cologne.*
1865	Vincent Statz, Architect - -	
1865	J. H. Wolff, Architect - -	*Hesse Cassel.*
1868	Lang, Heinrich - - -	*Carlsruhe*

AUSTRIA.—

1867	Chevalier Heinrich Ferstel, Architect	*Vienna.*
1867	Professor Chevalier Frederich Schmidt, Architect	
1867	Carl Hasenauer, Architect -	
1850	Christian Hansen, Architect - -	*Trieste.*
1850	——— Kranner, Architect - -	*Prague.*

SAXONY:—

1850	Albert Geutebrück, Architect of the University	*Leipzig.*

BAVARIA:—

1842	Friedrich Ziebland	*Munich.*
1850	Edouard Metzger } Architects -	

RUSSIA:—

1836	Professor Alexander Brulloff, Architect, Academy of Fine Arts - - -	*St. Petersburg.*
1868	C. Thon, Architect to the Emperor - -	
1867	Professor Jean Strohm - -	

SWEDEN:—

1855	Axel Nystrom, Architect - -	*Stockholm.*

HOLLAND:—

1839	——— Zocher, Architect, Member of the Institute and Royal Academy of Fine Arts at Amsterdam -	*Haarlem.*
1866	J. P. Cuypers, Architect - -	*Amsterdam.*

BELGIUM:—

1850	Charles Delsaux, Architect of the Province -	*Liège.*
1852	J. P. Cluysenaar, Architect - -	*Brussels.*
1868	W. H. J. Weale - - -	*Bruges.*

ELECTED.

SWITZERLAND:—

1859		Professor Gottfried Semper - -	*Zurich.*

ITALY:—

1839		Il Professore Besia, Royal Academy of Fine Arts	*Milan.*
1840	(d)	Gasparo Fossati, Architect - -	
1865		Giuseppe Mengoni, Architect - -	
1840		Raffaelle Politi, Archæologist - -	*Girgenti, Sicily.*
1844		Il Cavaliere Gio. Pietro Campana, Archæologist -	*Naples*
1847		Il Cavaliere Niccolo Matas, Architect -	*Florence.*
1848		Carlo Bonucci, Ex-Director of the Excavations at Pompeii - - -	*Naples.*
1850		Il Conte Selvatico, Architect - -	*Padua.*
1856		Ignazio Gardella - - -	*Genoa.*
1869		Emilio De Fabris - - -	Architects, *Florence.*
1869		Il Cavaliere Prof. Giuseppe Poggi -	

Papal States—

1869		Il Conte Virginio Vespignani, Architect -	*Rome.*
1869		Il Commendatore Luigi Poletti, Ex-President of the Academy of St. Luke, Architect - -	

PORTUGAL:—

1864		The Chevalier da Silva, President of the Institute of Portuguese Architects - -	*Lisbon.*

GREECE:—

1857		Lysandros Kaftangioglou, Architect - -	*Athens.*

EGYPT:—

1861		Mariette Bey, Archæologist - -	*Cairo.*

UNITED STATES OF AMERICA:—

1842		Frederick Diaper, Architect - -	*New York.*
1867		Richard Upjohn, President of the American Institute of Architects, 111, Broadway, New York -	
1853		George Snell, Architect - -	*Boston.*

MEXICO:—

1851		El Senor Professor Lorenzo Hidalga, Architect, Military College - -	*Mexico.*
1853		El Senor Cavalari, Architect -	

ASSOCIATES.

(D) Those who have been donors to the Funds or Collection to the amount of Five Pounds and upwards.

ELECTED

1868 Abbott, John O., 6, Whitehall, S.W.
1864 Adams, Charles J., 118, High Street, Stockton-on-Tees.
1869 Adkins, Benjamin, Faversham, Kent.
1866 Albury, F. W., Louth, Lincolnshire.
1857 Arding, Charles B., 23, Bedford Row, W.C.
1867 Arnold, T., 6, South Street, Finsbury Square, E.C.
1839 Artis, Addington, 19, Warwick Street, Golden Square, W.
1867 Atkinson, F., 38, Bedford Place, W.C.
1867 Bacon, H. F., 30, Regent Street, S.W.
1846 Baker, A. J., 35, Great St. Helen's, E.C.
1864 Baker, A. S. C., 133, Buckingham Place Road, S.W.
1864 Baker, W. A., 108, Gower Street, W.C.
1860 Barber, William S., Halifax, Yorkshire.
1866 Bayne, R. R., Garrick Street, W.C.
1845 Beck, William, 33, Finsbury Circus, E.C.
1866 Bell, E. Ingress, Castelnau, Barnes; and 30, Regent Street, S.W.
1868 Bernard, Wm. L., 12, John Street, Bristol.
1863 Birchall, Edward, 2, Park Place, Leeds.
1864 Birkett, Daniel, 1, Devonshire Street, Carlisle.
1869 (D) Blaber, Charles O., 63, Ship Street, Brighton.
1866 Blashill, T., 10, Old Jewry Chambers, E.C.
1860 Blessley, R. K., Westbourne Villa, Eastbourne, Sussex.
1864 Booth, Lawrence, 8, Essex Street, Manchester.
1865 Bottle, Jonathan T., 27, King Street, Great Yarmouth.
1868 Bowne, Henry E., Harrowgate.
1867 Bowyer, W. J., Cambridge.
1858 Britton, T. A., 1, St. James's Park, West Croydon.
1868 Brooks, Samuel, 5, King Henry's Road, N.W.
1839 Browne, John Henry, 1a, Holland Park, Notting Hill, W.
1847 Browning, E., Stamford, Lincolnshire.
1861 Buckeridge, Charles, 20, Princes Street, Cavendish Square, W.
1838 Buckley, William A., 5, Orme Square, Bayswater, W.
1860 Burgess, Hartley W., 15, Walbrook, City, E.C.
1849 Burnell, Henry H., f.s.a., 20, Cheyne Walk, Chelsea, S.W
1860 Burton, H. M., 6, Spring Gardens, Charing Cross, S.W.
1865 Caiger, Frederick Henry, 5, Gloucester Street, Warwick Square, S.W.
1863 Carpenter, R. Herbert, Carlton Chambers, 4, Regent Street, S.W.
1866 Carter, William A., 20, John Street, Adelphi, W.C.

ELECTED.

1856 Cates, Arthur, 7a, Whitehall Yard, S.W.
1864 Chancellor, Frederic, Pinner's Hall, Old Broad Street, E.C.; and Chelmsford.
1857 Christopher, J. T., 43, Lincoln's Inn Fields, W.C.
1865 Churcher, George P., 29, Doughty Street, Mecklenburgh Square, W.C.
1863 Clark, James, 14, Raven Terrace, Walmersley Road, Bury, Lancashire.
1869 Clarkson, John, 36, Great Ormond Street, W.C.
1869 Clarkson, Samuel F., 36, Great Ormond Street, W.C.
1869 Clifton, Abel G., George Place Offices, George Street, Plymouth.
1853 Coldwell, William G., 6, Huntingdon Street, Thornhill Square, Islington, N.
1859 Collins, H. H., 5, Queen Street, Cheapside, E.C.
1859 Constable, John S., 6, Leonard's Place, Kensington, W.
1843 Cooke, Robert, 5, Kendal Place, Vassall Road, Brixton, S.
1842 Corbett, W., 3, Raymond Buildings, Gray's Inn, W.C.
1844 Cox, J. E., Oxford and Cambridge Club, Pall Mall, S.W.
1867 Curzon, H., 61, Lincoln's Inn Fields, W.C.
1864 Darbyshire, Alfred, 7, St. James's Square, Manchester.
1865 Davis, J. Stacey, 26, Hamilton Street, Camden Town, N.W.
1869 Dawnay, Archibald D., 30, Coal Exchange, E.C.
1864 Dennison, J. W., 33, King Street, Cheapside, E.C.
1860 De Ville, Louis, 3, Duke Street, Adelphi, W.C.
1865 Dillon, Charles Rowe, 5, Bartholomew Villas, Kentish Town, N.W.
1864 Dollman, Francis T., 63, Gloucester Crescent, Regent's Park, N.W.; and 9, Adam Street, Adelphi, W.C.
1855 Donaldson, James S., 16, Aberdeen Park, N.
1867 Driver, C., 7, Parliament Street, S.W.
1864 Drury, Edward Dru, 35, Bucklersbury, City, E.C.
1866 Dunnage, G. A., 7, Furnival's Inn, E.C.
1869 Ebdy, Thomas C., Durham, (City).
1866 Emerson, William, 79, Hamilton Terrace, St. John's Wood, N.W.
1864 Ferguson, C. J., 8, The Crescent, Carlisle.
1868 Ferrey, Edmund B., 42, Inverness Terrace, Kensington, W.
1854 Field, Horace, 69, Lincoln's Inn Fields, W.C.
1860 Fletcher, Banister, 24, Bedford Square, W.C.
1865 Florence, Henry Louis, 10, Craig's Court, Charing Cross, S.W.
1847 Forster, Richard, 23, Delamere Terrace, Upper Westbourne Terrace, Hyde Park, W.
1863 Fowler, C. Hodgson, North Bailey, Durham.
1842 Fowler, Francis E. H., 32, Fleet Street, E.C.
1856 Fricker, Henry R., Cassland House, South Hackney, N.E.
1861 George, Ernest, 11, Argyll Street, City, E.C.
1864 Giles, John, 20, Craven Street, Charing Cross, S.W.
1853 Goldie, George, 9, Kensington Square, W.
1861 Gompertz, Francis T., 36, Bessborough Street, Pimlico, S.W.
1852 Goodridge, Alfred S., Bath.

ELECTED.

1861 Green, Theodore K., 23, Finsbury Place South, E.C.
1856 Green, W. J., St. John's Villa, Ealing.
1867 Groom, R., 16, Alwyne Road, N.
1866 Gritten, W., Jun., 8, Parliament Street, S.W.
1838 Groves, Frederick H., 9, Craig's Court, Charing Cross, S.W.
1860 Grüning, Edward A., 9, Gresham House, Old Broad Street, City, E.C.
1863 Hadfield, Charles, Knowl House, Sheffield.
1861 Hall, Henry, 3, Bloomsbury Place, W.C.
1867 Hannaford, W. S., Guildhall Chambers, Broad Street, Bristol.
1867 Hansom, E. J., Clifton, Bristol.
1863 Harris, R. O., 10, Holland Road North, Brixton, S.
1867 Harvey, W., 6, Whitehall, S.W.
1868 Hebb, John, 76, Tollington Road, Upper Holloway, N.
1865 Hendry, W. Hovenden, 33, Woburn Place, W.C.
1866 Henman, C., Jun., 7, Bedford Villas, Croydon, S.
1868 Hill, Arthur, 24, Keppel Street, W.C.
1858 Hills, Gordon M., 12, John Street, Adelphi, W.C.
1848 Hodge, Henry, 7, Burleigh Terrace, Kentish Town, N.W.
1867 Hoskins, G. G., Darlington.
1869 Hoole, Elijah, 30, Russell Square, W.C.
1859 Houle, Josiah, 9, Guildford Street, Russell Square, W.C.
1865 Hudson, John, 40, Leman Street, E.C.
1863 Hughes, E., 78, Cambridge Street, Pimlico, S.W.
1862 Hughes, F. P., Culputty, near Vychery, South Wynaud, Madras Presidency, India.
1868 Hunt, F. W., 5, Duke Street, Adelphi, W.C.
1866 Ingram, Robert S., 154, West Regent Street, Glasgow.
1865 Innocent, Charles J., Sheffield.
1858 Isaacs, Lewis H., 3, Verulam Buildings, Gray's Inn, W.C.
1868 James, Percival Isaac, 14, Bedford Row, W.C.
1866 Jameson, Frederick, 62, Great Russell Street, Bloomsbury, W.C.
1866 Jarvis, Henry, Jun., 29, Trinity Square, Southwark, S.E.
1868 Jones, Richard J., 8, Lind Terrace, Ryde.
1863 Joseph, N. S., 34, Coleman Street, E.C.
1864 Jowers, Alfred, 39, Great James Street, Bedford Row, W.C.
1869 Joy, James, 112, St. George's Road, Southwark, S.E.
1868 Joyce, Nicholas, Stafford.
1859 Judge, Frederick, 47, Charrington Street, Oakley Square, N.W.
1860 Keeling, E. Bassett, 1, Verulam Buildings, Gray's Inn, W.C.
1860 (D) Kempson, Frederick R., 34, Castle Street, Hereford.
1867 Kirby, E., Derby Buildings, Fenwick Street, Liverpool.
1862 King, C. R. B., 5, Houghton Place, N.W.
1859 Knight, Charles J., 14, Argyll Street, W.
1853 Knowles, J. T., Jun., 1, Raymond Buildings, Gray's Inn, W.C.
1869 Ladds, John, 4, Chapel Street, Bedford Row, W.C.

ELECTED.

1864 Lee, Charles Williams, 3, Whitehall Place, S.W.
1869 Lee, Ernest C., 10, Lincoln's Inn Fields, W.C.
1865 Lees, William H., Rugby Chambers, Chapel Street, Bedford Row, W.C.
1859 Legg, Henry S., 32, Bedford Row, W.C.
1866 Lemon, James, Borough Surveyor, Southampton.
1867 Lett, A., Jun., 10, King's Road, Bedford Row, W.C.
1866 Leuchars, Edgar, 3, Duke Street, Adelphi, W.C.
1867 Liddell, John, York Chambers, Adelphi, W.C.
1861 Long, Cæsar A., 5, Bowhill Terrace, Brixton Road, S.
1866 Lovejoy, Alfred, 35, Bucklersbury, E.C.
1867 Lowe, C. H., Court House, Marylebone, W.
1864 Luff, Henry Geo., 3, Elm Road, Camden Square, N.W.
1867 Manby, Francis, Southampton.
1866 Manning, Michael, 6, Mitre Court Chambers, Temple, E.C.
1868 Marsden, Wm. J., 13, Market Street, Sheffield.
1868 Marshall, H. M., 22, Old Burlington Street, W.
1863 Masey, P. E., 61, Mornington Road, N.W.
1865 Mathews, Joseph Douglass, 10, Cloak Lane, City, E.C.
1853 Mathews, Joshua Dewer, 15, Belgrave Terrace, Lee, Blackheath, S.E.
1869 Meeson, Fredk. R., 4, Harley Road, South Hampstead.
1859 Mew, F., 30, Doughty Street, W.C.
1865 Millar, Richard C., Clifton Villa, Monkstown, Dublin.
1865 Molecey, George T., Bombay.
1866 Moore, Frederick Holyoake, Northgate Street, Warwick.
1867 Moorshed, Henry, Devonport Hotel, Devonport
1858 Morris, Thomas, Carlton Chambers, 12, Regent Street, S.W.
1867 Moxon, C. J., 48, Albany Street, Regent's Park, N.W.
1866 Moy, William Arthur, 27, Bedford Row, W.C.
1865 Musgrave, Samuel, 5, County Buildings, Hull.
1861 Nesfield, W. Eden, 30, Argyll Street, W.
1863 Newton, John, 7, Salisbury Street, Strand, W.C.
1847 Nicholl, S. J., 38, Grove Road, St. John's Wood, N.W.
1856 Nichols, D. C., 33, Mecklenburgh Square, W.C.
1855 Nicholson, R., 7, Savile Terrace, Halifax, Yorkshire.
1869 Nightingale, John S., 21, Parliament Street, S.W.
1868 Notley, R. P., 53, Gracechurch Street, E.C.
1868 Noyes, John, 12, Clarges Street, May Fair.
1865 Oakden, Percy, *care of* Messrs. G. W. Wheatley & Co., 150, Leadenhall St., E.C.
1861 Oakley, William, 29, Charles Street, St. James's, S.W.
1864 (D) Osborn, F. B., 11, Temple Row, Birmingham.
1866 Paice, B. A., 9, George Street, Hanover Square, W.
1869 Pain, William, 3, Whitehall Place, S.W.
1865 Paris, Walter, Bombay.
1868 Patrick, George, 8, Burnley Road, Stockwell.

ELECTED.

1867 Peachey, W., Darlington.
1867 Peebles, A., 1, Walbrook Buildings, E.C.
1860 Penfold, John Wornham, 17, Parliament Street, S.W.
1864 Perry, J. Tavenor, 6, Markham Square, Chelsea, S.W.
1866 Picton, William Henry, 11, Dale Street, Liverpool.
1863 Poole, William, 2, Hawley Road West, N.W.
1849 Pope, R. P., 8, King's Road, Bedford Row, W.C.
1866 Porter, Thomas, 1, Westminster Chambers, Victoria Street, S.W.
1866 Powell, W., 11, Crooked Lane, King William Street, E.C.
1867 Power, E., Jun., 28, Craven Street, W.C.
1865 Purchas, Robert E., 8, St. Benet's Place, Gracechurch Street, E.C.
1867 Quilter, J. S., Architectural Association, 9, Conduit Street.
1867 Raikes, Robert, 55, Gloucester Place, Portman Square, W.
1845 Randall, N. T., 28, Great Winchester Street, City, E.C.
1865 Redford, James, 43, Lower Moseley Street, Manchester.
1845 Reed, W. C., 2, Adelaide Place, London Bridge, E.C.
1854 Rickman, T. M., f.s.a., 8, Montague Street, Russell Square, W.C.
1863 Ridge, Lacy W., 23, Bedford Row, W.C.
1869 Rolfe, Clapton C., Hailey Vicarage, Oxford.
1863 Roper, F. W., 7, South Street, Thurloe Square, Brompton, S.W.
1850 Rushforth, T. H., Carlton Chambers, 12, Regent Street, S.W.
1853 Salter, Stephen, Jun., 28, Woburn Place, Russell Square, W.C.
1869 Scamell, George, Jun., 1, London Street, E.C.
1851 Scott, Edmund E., 46a, Regency Square, Brighton.
1867 Shepard, H. D., 34, Tavistock Square, W.C.
1862 Shoppee, Charles J., 61, Doughty Street, W.C.
1854 Smith, C., Friar Street, Reading.
1866 Smith, P. G., 15, Springfield Villas, Kilburn Priory, N.W.
1867 Smith, S. E., Gordon Villa, Woodhouse Lane, Leeds.
1866 Smith, W., 10, John Street, Adelphi, W.C.
1865 Sorby, Thomas Charles, 27, Brunswick Square, W.C.
1865 Souttar, James, Stockholm.
1864 Speechly, R., Christchurch, New Zealand.
1861 Spiers, Richard Phèné, 21, Bernard Street, Russell Square, W.C.
1853 Spurr, Edmund A., Colney Hatch, Middlesex, N.
1864 Stevens, John H., 468, Hackney Road, N.E.
1864 Stone, Frederick, Doncaster.
1853 Suter, Richard G., 23, Fenchurch Street, E.C.
1862 Swansborough, Edward, 6, Great James Street, Bedford Row, W.C.
1862 Tabberer, Benjamin, 4, Vicarage Gardens, Campden Hill, Kensington. W.
1855 Tarn, Edward W., m.a., 34, Mecklenburgh Square, W.C.
1865 Tarver, Edward J., 10, Craigs Court, Charing Cross, S.W.
1863 Thompson, A. Hill, 8, South Parade, Leeds.
1864 Thomson, John J., 3, St. James' Square; and 13, Hobury Street, Chelsea, S.W.

ELECTED.

1851 THURSTON, C. B., F.S.A., 9, New Inn, Strand, W.C.
1867 TIJOU, H. E., 43, York Street, Cheetham, Manchester.
1854 TRACY, S. W., 3, Craven Road, Sussex Gardens, Hyde Park, W.
1865 TRUBSHAW, CHARLES, Stafford.
1867 TURNER, E., 44, Bedford Row, W.C.
1860 UNDERWOOD, MARTIN, Park Lane, Denbigh, North Wales.
1861 VAUGHAN, THOMAS, 11, Argyll Street, City, E.C.
1869 VIALLS, GEORGE, 15, Great James Street, Bedford Row, W.C.
1865 WADLING, HENRY, 3, Elm Road, Camden Square, N.W.
1864 WADMORE, JAMES F., Tunbridge, Kent.
1864 WALLEN, FREDERICK, 16, Furnival's Inn, E.C.
1869 WALKER, HENRY, 11, East Parade, Leeds.
1860 WALTON, J. W., 12, Buckingham Street, Strand, W.C.
1856 WARREN, F., 9, Adam Street, Adelphi, W.C.
1862 WATSON, THOMAS H., 9, Nottingham Place, Marylebone Road, N.W.
1862 WEBBER, JOSIAH, 94, Gower Street, W.C.
1867 (D) WELLS, THOMAS, 14, Manchester Square, W.
1863 WILLCOX, W. J., 1, Belmont, Bath.
1838 WILLIAMS, HERBERT, 52, Old Broad Street, City, E.C.
1856 WILLIAMS, R. L., Park Lane, Denbigh, North Wales.
1867 WILLIAMS, T. E., 67, Victoria Street, Westminster, S.W.
1869 WILLIAMS, WM. FREDK., 146, Albany Street, Regent's Park, N.W.
1854 WILLSON, T. J., 3, Southampton Street, Fitzroy Square, W.
1856 WILSON, F. R., Bondsgate, Alnwick, Northumberland.
1860 WINSTANLEY, HERBERT, 10, Basinghall Street, E.C.
1868 WORSLEY, REGINALD E., 8, Bedford Row, W.C.
1860 YOUNG, JOHN, 80, Guildford Street, Russell Square, W.C.

CONTRIBUTING VISITORS.

1856 BLASHFIELD, J. M., Stamford, Lincolnshire.
1864 The Director of the South Kensington Museum, Kensington, W.
1862 COLLMANN, LEONARD W., 53, George Street, Portman Square, W.
1866 CRACE, J. D., 14, Wigmore Street, W.
1856 CRACE, J. G. 14, Wigmore Street, W.
1862 ELLACOMBE, the Rev. H. T., M.A., F.S.A., Clyst St. George, Devon.
1864 FIELD, SIDNEY, Aberdeen.
1856 FRASER, JAMES W., 8, Kensington Palace Gardens, W.
1862 GREEN, JAMES, 100, New Bond Street, W.
1863 SKIDMORE, F. A., Coventry.

STUDENTS.

ADMITTED.	
1865	Dale, Herbert W., 68, Bedford Gardens, Campden Hill, W.
1866	Howes, W., 12, John Street, Adelphi, W.C.
1868	Paget, A. H., University Hall, Gordon Square, W.C.
1865	Style, Arthur J., Thames Ditton.
1868	Williams, Thomas, Frederick Place, Old Jewry, E.C.

CONTRIBUTIONS

TO

THE COLLECTION AND THE LIBRARY OF THE INSTITUTE

Between the 4th May, 1868, *and the 3rd May*, 1869.

DRAWINGS, PRINTS, PHOTOGRAPHS, &c.

AMERICAN INSTITUTE OF ARCHITECTS.—Photographs of Buildings, Ecclesiastical and Domestic, in America.

ARCHITECTURAL ASSOCIATION, per R. Phèné Spiers, President.—Architectural Association Sketch-book, 1868-69.

BURTON (D.) Fellow, per Wyatt Papworth, Fellow.—Maddox (G.) Sketch-book. Ten leaves of drawings. 8o. *circ.* 1819-20

BUSIRI (Cav. Andrea) per Professor Donaldson, Hon. Sec. For. Corr.—Veduta di un Casino eretto nella valle Reatina, presso il Fiume Susanna. 3 sheets. *Prints.*

DILLON (C. R.) Associate.—Arundel Society, Cathedral of Santiago de Compostella in Spain, showing the Sculpture of the Portico de la Gloria, by Mestre Mateo. *Text and photographs.* 4o. *Lond.* 1868

DONALDSON, Professor, Hon. Sec. For. Corr.—Plan of the Port of Marseilles.

KING (C. R. B.)—Totnes Church, Devon. Two Drawings of Stone Screens.

METROPOLITAN BOARD OF WORKS, per J. W. Bazalgette, Engineer.

Thames Embankment; Middlesex side. Two Contract Drawings.

(1) Between Waterloo and Westminster Bridges.

(2) Between Waterloo and Inner Temple. oblong fol. 1863

POGGI (Cav. Prof. Giuseppi) Honorary and Corresponding Member.

Florence. *Photographs.*

Piazza Vittorio Emanuele. 1869

Sala esequita per il Marchese Gerini. 1869

Palazzo Arese. 1869

——— Cavour. 1869

Villino Battista Favard. 1869

POLETTI (L.) Honorary and Corresponding Member.

Rome. *Photographs.*

Prospettiva tratta dal Modello del nuovo S. Paolo.

Prospetto del nuovo Collegio Scozzese. 1864

POLETTI (L.)—*continued.*

Grande edificio per uso di molte abitazioni private.

Cimitéro di Gualdo. Pianta—Sezioni—Prospetto.

Nocera (S. Filippo) Nuova chiesa. 1859

——————— Iconografia, Spaccato and Prospetto. 1859

Rome. *Prints of various subjects.*

Pianta, Navata, Sezione delle cinque navate, et Progetto della decorazione marmorea della nave traversa della rinnovata Basilica S. Paolo fuori le mura.

Monumento della Dogana.

POWER (E.) Associate.—Lewisham, St. Mark's Church. Design for Perspective View of Interior. *Photograph.*

SMITH (Mrs. C. H.)

Bonomi (J.) Plans, Sections, and Elevations of "Roseneath," N.B. 19 sheets.

——— of Parish Church, Great Packington, Warwickshire.

Designs, &c., for Mausoleum, Blickling Park, Norfolk.

Design for a Sepulchral Memorial; Plans, Elevations, and Sections.

STRONG (A.) Associate.—Parr and Strong's patent cellular fire-proof construction. *Photograph.*

TITE (Sir Wm., M.P., President).

Wyatt (B.) Duke of York's Monument. Drawings of Plans, Sections, Elevations, &c.

——— Historical Portraits of Archæological Exhibition, Aberdeen, 1859. *Photographs.*

VESPIGNANI (Il Conte Virginio) Honorary and Corresponding Member.

Rome.—Alcune tavole appartenenti all' opera dell' illustrazione della Basilica di S. Lorenzo. 14 sheets.

——— Tavole di una piccola capella appartenente alla Casa Savorelli. 4 sheets.

——— Vedute del nuovo Campo Santo di Roma in costruzione.

——— Opere varie. *Prints and Photographs.*

BOOKS, PAMPHLETS, &c.

AITCHISON (G.) Fellow.

Vitruvius Pollio (M.)—L'Architettura generale di Vitruvio ridotta in compendio dal Sig. Perrault. 12o. *Venezia,* 1747

ACADEMIE ROYALE DES SCIENCES, DES LETTRES, ET DES BEAUX ARTS DE BELGIQUE.—Bulletins des Séances de la Classe des Beaux Arts. Tome XXV. Annuaire, 1869. 12o. *Brux.* 1869

ARCHÆOLOGICAL SOCIETY OF ATHENS.—Reports of proceedings. 4o. *Athens,* 1853, 1860-67

ARCHITECTURAL PUBLICATION SOCIETY.—Dictionary of Architecture. Part 18. 1868

ARCHITECTURAL SOCIETIES, per G. Rowe, M.A., Secretary.

Reports and Papers read at Meetings of the Architectural Societies of the Counties of York, Bedford, Leicester, the Archdeaconry of Northampton and Diocese of Worcester. Vol. IX. Plate 1. 8o. *Lincoln,* 1867

Index to first 8 Vols. of Reports and Papers read at Meetings of the Architectural Societies (ed. G. Rowe). 8o. *Lincoln,* 1867

ART UNION OF LONDON.—Thirty-second Annual Report. 8o. *Lond.* 1868

BENSON (W.)*—Principles of the Science of Colour; with their application in the Decorative Arts. 4o. *Lond.* 1868

BERNARD (W. L.) Associate.

Waring (J. B.) Illustrations of Architecture and Ornament. 4o. *Lond.* ——

BILLING (A.) Fellow.—On Mural Painting and Decoration of Churches generally. 2nd edition. pamph. 8o. *Lond.* 1868

BLASHFIELD (J. M.) Contributing Visitor.

Terra Cotta Architecture; examples. Parts I.-VIII.

Part I. Chimney Shafts, Chimney Pots, &c.
II. Balustrades, Panels, Terminals, &c.
III. Doorways, Windows, Balconies.
IV. Consoles, Brackets, Pilasters, &c.
V.-VIII. Vases, Statues, Tazzæ, Pateræ, &c. obl. 4o. *Stamford,* 1868

BOULT (J.) Fellow.—Structural Requirements of the Fire Prevention Acts, and similar Regulations within Borough of Liverpool. pamph. 8o. *Liverpool,* 1869

BUSIRI (Prof. Caval. Andrea.)

Folchi (C.) Biografia del Cavaliere Andrea Vici. pamph. 8o. *Roma,* 1836

Discorso sulle operazioni che si richieggono per la bonificazione delle terre dell' Agro Romano. pamph. 8o. *Roma,* 1847

Ragionamenti sulle scoperte recentemente fatte in Tivoli 1833-34. 4o. *Roma,* 1834

Il Portico detto del Vignola esistente nel giardino del reale Palazzo di Toscana in Roma. fo. *Roma,* 1848

BUSIRI ( ) per Prof. Donaldson, Hon. Sec. For. Corr.—Brevi notizie intorno al Commendatore Clemente Folchi. pamph. 8o. *Roma,* 1869

BURNELL (G. R.) Fellow, the late, and BURNELL (E. H.)

Allen (G.) Designs, etc. for the future Approaches to new London Bridge; Memorial for New Streets and Improvements in London and Southwark. pamph. 8o. *Lond.* 1828

Amati (C.) Gli ordini di architettura del Barozzi da Vignola. fo. *Milano,* 1805

———— Regole del chiar-oscuro in architettura. fo. *Milano,* 1802

Anonymous.—Promenades ou itinéraire des jardins de Chantilly. 8o. *Paris,* 1791

———— Narrative of the great and terrible Fire of London. 8o. *Lond.* 1769

---

* When the Donor is also the Author, his name is not repeated.

BURNELL (G. R.)—*continued.*

ANONYMOUS.—Narrative of the great Storm, Nov. 26, 1703. 8o. *Lond.* 1769

——— What are we about? or Common Sense upon Drainage. pamph. 8o. *Lond.* 1856

——— Histoire du Canal de Languedoc. 8o. *Paris,* 1805

——— Remarks on Revolving Storms. 8o. *Lond.* 1851

——— Tour through Normandy. sm. 4o. *Lond.* 1754

ANSTED (D. T.) and NICOLAY (C. G.) Atlas of Physical and Historical Geography. 4o. *Lond.* ——

BAILEY (S.) On Nature, Measures, and Causes of Value chiefly in reference to Ricardo's Writings. 8o. *Lond.* 1825

BARRY (J.) Letter to the Dilettanti Society as to the obtention of certain matters necessary for the Improvement of Public Taste, etc. 2nd edit. 8o. *Lond.* 1799

BENSON (C.) Sketches of Corsica in 1823. 8o. *Lond.* 1825

BETHELL (J.) New Patent Improvements in Preserving, Drying, and Seasoning Timber. pamph. 8o. *Westminster,* 1854

——— Patent Creosoting Process for Preserving Timber from Decay, etc. pamph. 8o. *Lond.* 1856

BIRCH (B.) City Latin; or Critical and Political Remarks on Latin Inscription of laying First Stone of New Black-fryars Bridge. 3rd edit. [by B. Thornton.] 8o. *Lond.* 1761

Board of Health.—On Interference with Rights and Arrangements of Local Authorities of Provincial Towns pamph. 8o. *Lond.* 1852

Boat Building by Machinery.—Prospectus and Appendix. pamph. 8o. ——

BODIN (J. F.) Recherches sur le ville de Saumur,—ses monumens, etc. 2 vol. 8o. *Saumur,* 1812-14

BONNAUD (E.) L'Espagne et son avenir. pamph. 8o. *Paris,* 1860

BOTTARI (J.) Raccolta di lettere sulla pittura, scultura ed architettura. 2 vols. 8o. *Roma,* 1754-57

Brussels.—Compagnie du Cherche-fuites. Rapports, extraits, etc. d'éclairage par le gaz dans les habitations. pamph. 8o. ——

BULTEAU (L'ABBÉ) Description de la Cathédrale de Chartres. 8o. *Chartres,* 1850

——— Eglise de St. Pierre et St. Andre, à Chartres.

BURGE (G.) Drainage and Cleansing the Thames. pamph. 8o. ——

CALLIAUD (F.) Carte géologique du département de la Loire-inférieure. pamph. 8o. *Nantes,* 1861

CALVERT (F. C.) On Coal-tar Colours and recent Improvements in Dyeing and Calico Printing. pamph. 8o. *Manch.* ——

CAMUS (F.) L'Art de tremper les fers et les aciers. 8o. *Paris,* 1846

CARBONAZZI (G. A.) and BERNARDI (B.) Cenni sulle condizioni attuali della Sardegna. 8o. *Torino,* 1849

CAPELLINI (G.) Balenottera fossile nelle argille plioceniche di S. Lorenzo in collina Bologna. pamph. 8o. *Bologna,* 1862

——— Geologia e paleontologia del Bolognese. 1862

BURNELL (G. R.)—*continued.*

Champfleury.—Histoire do la caricature antiquo [by Jules Fleury]. 12o. *Paris*, 1865

Chantilly.—Promenades, ou itinéraire des jardins. [Anonymous.] 8o. *Paris*, 1791

Charma (M. A.) Lanfranc, notice biographiquo, littéraire et philosophique. 8o. *Paris*, 1849

Chateau (L.) Histoire et caractères de l'architecture en Franco depuis l'époque druidique jusqu'à nos jours. 8o. *Paris*, 1864

Colignon (E.) Théorie élémentaire des poutres droites, ponts métalliques, américains, etc. 8o. *Paris*, 1856

Coquerel (A. J.) Des Beaux-arts en Italie au point de vue religieux. 12o. *Paris*, 1857

Cousinery (B. E.) Recueil des tables à l'usage des ingénieurs. 8o. *Paris*, 1846

Desor (E.) Les palafittes ou constructions lacustres du lac de Neuchatel. 8o. *Paris*, 1865

Dionigi (M.) Precette elementari sulla pittura de Paesi. 8o. *Roma*, 1816

Drainage.—What are we about? or Common Sense on Drainage [Anonymous). pamph. 8o. *Lond.* 1856

Dupin (C.) Mémoires sur la marine et les ponts et chaussées de France et d'Angleterre. 8o. *Paris*, 1818

Ely.—Local Board of Health. Report of Committee on Memorial of Ratepayers. pamph. 8o. *Ely*, 1858

Ellis (R.) History of Thornbury Castle. 8o. *Lond.* 1839

Fairbairn (W.), Leslie (J.) and Johnson (R.) Report, the Smoke Case in causa Procurator Fiscal *v.* C. Todd and Higginbotham. pamph 8o. *Glasgow*, 1854

Gant (S. C.) Notes and Queries on the Public Health Act, 1848, with Suggestions for a New Bill. 8o. *Lond.* 1855

Graphic and Historical Illustrator (by E. W. Brayley). 4o. *Lond.* 1834

Griffith (J. W.) General Report on Sanitary State of Clerkenwell for 1856. pamph. 8o. *Lond.* 1857

Grosvenor (F.) Historical Account of the Collegiate Church of St. John the Baptist, Chester (from Archæological Institute Proceedings). pamph. 8o. 1857

Harris (W.) The King's Palace and Gardens at Loo, with an Account of Holland. sm. 4o. *Lond.* 1699

Hartshorne (C. H.) Conway Castle [extract from the Archæologia Cambrensis, No. XVII.] pamph. 8o. 1853

Hegel (G. W. F.) Essai analytique et critique sur l'esthétique, translated by C. Benard. 8o. *Paris*, 1852

Henwood (G.) Lectures on Geology and Mining. 8o. *Lond.* 1855

Hoare (P.) Epochs of the Arts; Hints on Use and Progress of Painting and Sculpture in Great Britain. 8o. *Lond.* 1813

Home (H.) Lord Kames—Elements of Criticism. 11th edit. 8o. *Lond.* 1839

Hutton (C.) Principles of Bridges; Mathematical Demonstrations of Properties of Arches, Thickness of Piers, etc. 8o. *Newcastle*, 1772

Jacquin (J.) et Duesberg (J.) Rueil; le Chateau de Richelieu la malmaison. 8o. *Paris*, 1845

BURNELL (G. R.)—*continued.*

Jay (L. J.) Recueil de letters sur la Peinture, la Sculpture, et l'Architecture. 8o. *Paris,* 1817

Kelsall (C.) Classical Excursion from Rome to Arpino. 8o. *Geneva,* 1820

Kératry (A. H.) Du beau dans les arts d'imitation. 2 vol. 8o. *Paris,* 1822

Knight (R. P.) Analytical Inquiry into the Principles of Taste, 4th edit. 8o. *Lond.* 1808

Kugler (F.) Geschichte der baukunst, mit illustrationen. 3 vols. 8o. *Stuttgart,* 1859

———— Denkmäler der architectur, with 57 pl. by Von Voit, E. Guhl, W. Lübke, C. v. Lützow. fol. *Stuttgart,* 1860

Lafolie (C. J.) Mémoires rélatifs à la fonte et à l'élevation de la statue équestre de Henri IV. à Paris. 8o. *Paris,* 1819

Languedoc—Histoire du Canal de [Anonymous]. 8o. *Paris,* 1805

Le Brun (L.) Théorie de l'Architecture Grecque et Romaine avec un discours préliminaire, par F. E. Joubert. fo. *Paris,* 1807

Lefebvre (P.) et Benoit-Champy (G.) Mémoire pour MM. Bordeaux et Richardière liquidateur de la Societé, J. Mires et C^ie^ contre M. Delfau de Pontalba. pamph. 8o. *Paris,* 1861

Lloyd (F.) Remarks on the Warming, Ventilation, and Humidity of Rooms. pamph. 8o. *Lond.* 1854

London.—Narrative of the Great and Terrible Fire [Anonymous]. 8o. *Lond.* 1769

Manjarres (J.) Teoria é historia de las bellas artes. 8o. *Barcelona,* 1859

Marmora (Count A. de la) Voyage en Sardaigne ou description statistique physique et politique de cette île. 8o. *Paris,* 1840

———— Itinéraire de l'île de Sardaigne. 2 vols. 8o. *Turin,* 1860

Marquez (P. G.) Esercitazioni architettoniche sopra gli spettacoli degli antichi. 4o. *Roma,* 1808

———— Due antichi monumenti di architettura Messicana. 8o. *Roma,* 1804

Marulli ( ) Su l'Architettura e su la nettezza delle città, idee. 4o. *Firenze,* 1868

May (C.) Durham Sewage; Letter to Local Board of Health of Durham, in reply to Letter from General Board. pamph. 8o. *Lond.* 1852

Mazure (P. A.) Philosophie des Arts du Dessin. 8o. *Paris,* 1838

M'Dermot (M.) Critical Dissertation on Nature and Principles of Taste. 8o. *Lond.* 1823

Metropolitan Sewage Manure.—Analysis of Evidence; Value of Refuse of Towns applied to Agriculture, edited by Dr. Guy. 3rd edit. pamph. 8o. *Lond.* 1848

Millin (A. L.) Etude des pierres gravées. 8o. *Paris,* 1796

Monaldini (G. A.) Le vite de piu celebri Architetti; d'ogni nazione e d'ogni tempo precedute da un saggio sopra l'architettura. 4o. *Roma,* 1768

Morgan ( ) and Horn ( ) Reply to Mr. Wicksteed's Report on the practicability of obtaining sufficient Supply of Water. pamph. 8o. *Dewsbury,* 1857

Muller (C. O.) History and Antiquities of the Doric Race; translated from the German by H. Tufnell and G. C. Lewis. 2nd edit. 2 vols. 8o. *Lond.* 1839

Murray (J.) On the Stability of retaining Walls. pamph. 8o. *Lond.* 1855

BURNELL (G. R.)—*continued.*

NAYLOR (W.) Analysis of Evidence on Cause and Failure of the Bradfield Reservoir. pamph. 8o. *Lond.* 1864

Normandy.—Tour through [Anonymous]. sm. 4o. *Lond.* 1754

O'DOHERTY (W. A.) Water for Domestic Use, with Table of Analysis of London and other Waters. pamph. 8o. *Lond.* 1862

ORME (P. DE L') Architecture de. 10 books. fo. *Rouen,* 1648

Oxford Society for Promoting the Study of Gothic Architecture.—Rules, Transactions, &c. 8o. *Oxon,* 1840-46

PARCHAPPE (M.) Des principes à suivre dans la fondation et construction des asiles d'aliénés. 8o. *Paris,* 1853

Paris.—Travaux des Maçonnerie; série de prix établie. 4o. *Paris,* ——

——— Prix de réglement des entrepreneurs de peinture et de vitrerie de Paris. 4o. *Paris,* 1847

PARKER (J. H.) Mediæval Architecture of Chester, viz.: City, Cathedral, Abbey, Buildings, Documents, &c.; historical introduction by Rev. F. Grosvenor. 8o. *Chester,* 1858

POCOCK (W. W.) On Value and Sewage of London, in Letter to Metropolitan Board of Works. pamph. 8o. *Lond.* 1856

PONZ (A.) Viage de España en que se da noticia de las casas mas apreciables, y dignas de saberse que hay en ella. 2nd edit. 18 vols. 8o. *Madrid,* 1776-94

POWER (G.) Guida per la Sicilia. 8o. *Napoli,* 1842

Poor Law Amendment Act.—The Poor and Poor Laws under the old system and the new; analysis of 22 reports, &c. 8o. *Lond.* 1837

PRICE (J.) Considerations of a Stone Bridge from Westminster to Lambeth. pamph. 8o. *Lond.* 1735

PRIDEAUX (T. S.) On Prevention of Smoke. pamph. 12o. *Lond.* ——

Public Health Bill, 1855.—Petition of Proprietors of Lambeth Water Works against the Bill. pamph. 8o. 1855

QUARENGHI (G.) Edifices construites à St. Petersbourg. fo. *St. Petersbourg,* 1810

QUATREMÈRE-DE-QUINCY (A. C.) La Nature, le but et les moyens de l'imitation dans les beaux-arts. 8o. *Paris,* 1823

L'Ideal dans les applications pratiques aux œuvres de l'imitation propre des arts du dessin. 8o. *Paris,* 1837

RANGER (W.) Report to General Board of Health on Enquiry into Sewerage, etc., of Ipswich. pamph. 8o. 1856

RAWLINSON (R.) Report to Local Board of Health for Tynemouth on completion of Public Sewage Works. pamph. 8o. *N. Shields,* 1857

Reports on Sewage and Drainage in Chorley. pamph. 8o. *Chorley,* 1857

REDDIE (J.) Vis inertiæ victa, or Fallacies affecting Science. 8o. *Lond.* 1862

RENOUVIER (J.) Monumens de quelques anciens diocéses de Bas-Languedoc. 4o. *Montpelier,* 1840

ROSE (H.) Lectures on Architecture in England from earliest to present time. 8o. *Lond.* 1843

BURNELL (G. R.)—*continued.*

ROSENGARTEN (A.) Die architektonischen stylarten, eine kurze darstellung der charakteristischen ver schiedenheiten der architektonischen stylarten. 8o. *Braunschweig,* 1857

SALME (L.) Traité de perspective théorique et pratique. 12o. *Paris,* 1843

Sanitary Reform and Reformers.—Information for Metropolitan Vestries and Local Boards of Health. pamph. 8o. *Lond.* 1855

SHANAHAN (M.) Plans and Elevations of Bridges in France, Switzerland, Italy and Savoy, 34 plates; with two plates of Carton Park, Kildare, and Blackfriars, London. obl. fo. ——

SASSO (C. N.) Napoli Monumentale. 8o. *Napoli,* 1858

SKYRING (W. H.) Builders' Prices. 8o. *Lond.* 1854

SMITH (T.) Copy of Letter on Nuisances Removal Bill. pamph. 8o. —— 1855

———— Evidence on Public Health and Nuisances Removal Bill. pamph. 8o. *Lond.* 1855

SNOW (J.) Letter to Sir B. Hall, President of Board of Trade, in refutation of attacks against him on subject of Public Nuisances. pamph. 8o. *Lond.* 1855

STENDHAL ( ) Histoire de la peinture en Italie [by H. Beyle]. 12o. *Paris,* 1854

Storm.—Narrative of the Great Storm [Anonymous]. 8o. *Lond.* 1769

——— Remarks on Revolving Storms [Anonymous]. 8o. *Lond.* 1851

SUTTER (D.) Philosophie des beaux arts appliquée à la peinture. 8o. *Paris,* 1858

SYMONDS (J. A.) The Renaissance; an Essay. pamph. 8o. *Oxon,* 1863

TAYLOR (W. B. S.) Origin, Progress, and present Condition of Fine Arts in Great Britain and Ireland. 2 vols. 8o. *Lond.* 1841

Timber.—Testimonials on Mr. Bethell's Patent Creosoting Process for Preserving. pamph. 8o. *Lond.* 1854

TITE (W.) Paris Street Improvements and their Cost. From the Journal of the Statistical Society of London. pamph. 8o. 1864

TSCHISCHKA (F.) Der St. Stephans-dom in Wien und seine alten denkmale der kunst. fo. *Wien,* 1832

TODD (G.) Account of Sheriff Hutton Castle, with notices of Church of St. Helen; ancient Forest of Galtres, &c. 8o. *York,* 1824

Telegraph.—Application de la Télégraphie Electrique aux usages domestiques [par L. L. V.] Extrait de la revue générale de l'architecture. pamph. 8o. ——

Tottenham Local Board of Health.—Report of Committee of Owners and Ratepayers to consider certain proceedings of Local Board of Health. pamph. 8o. *Tottenham,* 1856

Address of Local Board to Parishioners. pamph. 8o. *Tottenham,* 1856

Appendix to Address, &c. ——

Tottenham Parochial Committee and Local Board of Health; Supplementary Report. pamph. 8o. *Tottenham,* 1856

BURNELL (G. R.)—*continued.*

TRIQUETI (H. DE) Les trois musées de Londres; le British Museum, la National Gallery, le South Kensington Museum; leur progrès, richesses et administration. 8o. *Paris,* 1861

TROYON (F.) Habitations lacustres des temps anciens et modernes. 8o. *Lausanne,* 1860

VALMY (LE DUC DE) Le passé et l'avenir de l'architecture. 8o. *Paris,* 1864

VITRY (U.) Le vignole de poche; ou mémorial des artistes des propriétaires et des ouvriers. 5th edit. 12o. *Paris,* 1843

Dictionnaire portatif d'architecture civile. 3rd edit. 12o. *Paris,* 1840

VERGNAUD-ROMAGNESI (C. F.) Archéologie du département de Loiret—La restauration du Mausolée de Philippe I^er^ à St. Benoit-sur-Loire. 8o. *Paris,* 1831

Notice sur le Château de Chambord. 8o. *Paris,* 1832

Notice Historique sur le Fort des Tourelles d'Orléans. 8o. *Paris,* 1832

Sur l'emplacement du Fort des Tourelles du Pont d'Orléans. 8o. *Paris,* 1834

Rapport sur une Figurine antique trouvée à Tigy (Loiret). 8o. *Paris,* 1833

Sur la vie et les Ouvrages de M. Pelliaux ainé de Beaugency. 8o. *Paris,* 1833

Notice sur J. R. D. Riffault. 8o. *Orléans,* 1826

Mémoire sur des Médailles Romaines. 8o. *Paris,* 1833

Mémoire sur des Sculptures antiques. 8o. *Paris,* 1834

Mémoire sur une Mosaïque et des Antiquités Romaines près de Chateaudun. 8o. *Paris,* 1835

Mémoire sur l'ancienne porte de St. Laurent à Orléans. 8o. *Paris,* 1836

Notice sur la porte Saint Jean d'Orléans. 8o. *Paris,* 1833

Notice sur une ancienne Bannière d'Orléans. 8o. *Paris,* 1836

WALLIS (J.) Dendrology; Facts and Experiments that trees derive their nutriment independently of the earth; observations on decay and defect in trees. 8o. *Lond.* 1833

WICKSTEED (T.) Report on Practicability of obtaining sufficient Supply of Water for Dewsbury, Heckmondwike and Batley. pamph. 8o. *Dewsbury,* 1856

WILLIAMS (C. W.) Operation of Smoke Nuisance Act; Prevention of Smoke and Remedy, &c. pamph. 8o. *Lond.* 1856

YOUNG (E.) Pre-Raffaellitism, or Enquiry into Principles connected with Philosophy, Poetry, Religion, and Revolution of Art. 8o. *Lond.* 1867

CANADIAN INSTITUTE (THE).—Canadian Journal, Nos. 64-66, and vol. XII. No. 1. 8o. *Toronto,* 1867-8

CAUMONT (A. de) Hon. and Corr. Member.

Bulletin monumental ou collection des mémoires sur les monuments historiques de France 1867-68

Archéologie des Ecoles primaires. 8o. *Caen,* 1868

COOKE (T. F.) Authorship of the practical Electric Telegraph of Great Britain; or the Brunel Award vindicated in VII. letters. 8o. *Bath*, 1868

DALY (C.) Hon. and Corr. Member.—Revue générale de l'architecture et des travaux publics. Vols. XXV.-XXVI. 1867-68

DONALDSON (T. L.) Past President, Hon. Sec. For. Corr.
Archæological Institute of Great Britain and Ireland.—Archæological Journal. Nos. 91-94. 8o. *Lond.* 1866-67

Chambers (G.) Dessins des edifices, meubles, habits, machines et ustenciles des Chinois. fol. *Lond.* 1757

EASTLAKE (C. L.) Assistant Secretary, Fellow. Hints on Household Taste in Furniture, Upholstery, and other details. 8o. *Lond.* 1868

ECCLESIOLOGICAL SOCIETY (The)—Ecclesiologist (The). 1867-68

EDUCATION, COMMITTEE OF COUNCIL ON.—National Portrait Exhibition. Descriptive Catalogue of the Portraits. (3rd Exhibition, 1868). By R. H. S. Smith and Dr. Althaus. 8o. *Lond*, 1868

EDITOR (The) Architect (The). 1869
——— Arts, Journal of Society of. 1868-69
——— Bombay Builder. 1868-69
——— Builder (The). 1868-69
——— Builders' Weekly Reporter. 1868-69
——— Building News (The). 1868-69
——— London Review (The). 1868
——— Notes and Queries. 1868-69

FABRIS (E.) de, per Prof. Donaldson, Hon. Sec. For. Corr.
Del sistema tricuspidale per il coronamento della facciata di S. Maria del Fiore. pamph. 8o. *Firenze*, 1864
Seguito alle consederazioni publicate nel 1864, del sistema trecuspidale, &c. &c. pamph. 8o. *Firenze*, 1867
Florence.—Del concorso per la facciata di S. Maria del Fiore, rapporto dalla commissione guidicante. 4o. *Firenze*, 1863
——— Voti e pareri diversi sulla facciati del Duomo di Firenze. 4o. *Firenze*, 1865
——— Seguito ai voti e pareri diversi sulla facciata, &c. &c. 4o. *Firenze*, 1865
Martini (F.) Rapporto del terzo concorso per la facciata di S. M. di Fiore. 4o. *Firenze*, 1867

FERGUSSON (J.) Fellow, F.R.S.—Tree and Serpent Worship, or illustrations of Mythology and Art in India in the first and fourth centuries after Christ, from the Sculptures of the Buddhist Topes at Sanchi and Amravati. 4o. *Lond.* 1868

FIELD (Edwin W.) Secretary to the Commission.—Courts of Justice Commission. New Law Courts.—Block Plans and Sections prepared by G. E. Street; Details added. obl. fo. *Lond.* 1868

GARNIER (C.) Hon. and Cor. Member, per Prof. Donaldson, Hon. Sec. For. Corr.
L'Ile d'Egine, histoire, monuments, pays, &c. pamph. 8o. *Paris*, 1857

GARNIER (C.)—*continued.*

L'Ile d'Egine, Temple de Jupiter Panhellénien, extrait de la Revue Archéologique. pamph. 8o. *Paris*, 1854

Rapport sur les Théâtres de l'Europe. pamph. sm. fol. *Paris*, 1863

Nouvel opéra ; rapport des travaux. pamph. sm. fol. *Paris*, 1863

——————— Eclairage de la salle. pamph. sm. fol. *Paris*, 1864

——————— Economies—marche des travaux. pamph. sm. fol. *Paris*, 1866

——————— Marche des travaux pendant l'année 1866 pamph. sm. fol. *Paris*, 1867

GOZZADINI (G.) Studii archeologico-topografici di Bologna. 4o. *Bologna*, 1868

GROOM (R.) Associate. Description des œuvres d'art qui décorent les édifices publics de Bordeaux (illustrated). 8o. *Paris*, 1861

HAUGHTON (B.) Address delivered to the Civil and Mechanical Engineers' Society on opening of Session. pamph. 8o. *Lond.* 1868

HUDDERSFIELD ARCHÆOLOGICAL ASSOCIATION.—Yorkshire Archæological and Topographical Journal. Part I. 8o. *Lond.* 1869

INSTITUTION OF ENGINEERS IN SCOTLAND.—Papers read on Glasgow Water Works (1863-64) by J. M. Gale. 8o. *Glasgow*, 1864

JONES (G. Fowler) Fellow. Civitates orbis Terrarum. G. Brvin, S. Novellanvs, F. Hogenbergivs. 1st edit. fo. *Coloniæ, Antverpiæ*, 1572

JONES (Horace) Fellow.—Metropolitan Meat and Poultry Market, Smithfield. Brief account of the Origin and Erection of the Market. pamph. 8o. 1868

JUDGE (G.) Jun. Fellow.

Baltard (L.) Paris et ses monumens, mesurés, dessinés, et gravés, avec descriptions historiques par Amaury-Duval. fo. *Paris*, 1803

Humber (W.) Treatise on Cast and Wrought Iron Bridges and Girders, as applied to Railway Structures, &c. 4o. *Lond.* 1857

King (T. H.) Orfèvrerie et ouvrages en métal du moyen-âge, plans, coupes et détails. fo. *Bruges*, 1852

KAUTANZOGLOS (Kaftangioglu L.) Hon. and Corr. Member.

Artistic examination of the Works executed for the completion of the University of Athens (text in Greek). 8o. *Athens*, 1865

Opinions on the modifications of the plan of Modern Athens (text in Greek). pamph. 8o. *Athens*, 1868

LAYARD (A. H.) M.P., D.C.L., Hon. Member.—Suggestions for a National Gallery. pamph. 8o. *Lond.* 1868

LOCKWOOD (Messrs.)

Burnell (G. R.) Builder's and Contractor's Price Book for 1869. 12o. *Lond.* 1869

Engineer's, Architect's and Contractor's Pocket Book for 1869. 12o. *Lond.* 1869

LONDON, Corporation of the City of. (Library Committee).—Catalogue of Sculpture, Paintings, Engravings, &c., with Books not included in Catalogue of Guildhall Library. Parts I and II. 8o. *Lond.* 1867-68

LONDON UNIVERSITY COLLEGE.—Calendar, 1868-69. 8o. *Lond.* 1868

LYNN (W. H.) Fellow.—Close (S. P.) Holy Cross Abbey; County Tipperary; measured drawings with descriptive letter-press. fo. *Belfast*, 1868

MACKISON (W.) Fellow.—Paisley, Inaugural Ceremony in honour of Opening of Fountain Gardens, Paisley. 8o. *Paisley*, 1868

MANCHESTER SOCIETY OF ARCHITECTS.—Third Annual Report. pamph. 8o. *Manch.* 1868

Report of Committee on Bricks and Brickmaking. pamph. 8o. *Manch.* 1868

Address by the President (W. R. Corson). pamph. 8o. *Manch.* 1869

MATAS (Cavaliere) Honorary and Corresponding Member.

Raggi (O.) La chiesa di Santa Croce e la sua facciata. pamph. 12o. *Firenze*, 1863

Considerazioni intorno alla facciata di S. Maria del Fiore. pamph. 12o. *Firenze*, 1863

METROPOLITAN BOARD OF WORKS.

Index of the Streets and Places in the Metropolis, according to existing nomenclature. 8o. *Lond.* 1868

Returns of Names of Streets in the Metropolis; Streets re-named and abolished, etc. 8o. *Lond*, 1868

Report (1867-68) of Metropolitan Board of Works 8o. *Lond.* 1868

MOREL (Messrs. A. & Co.) Gazette des Architectes et du Bâtiment. *Paris*, 1868-69

MOREY (P.) Hon. and Corr. Member.

Quelques antiquités Gauloises en Lorraine particulièrement du briquetage de la seille. pamph. 8o. *Nancy*, 1868

Notices sur la vie et les œuvres du R. P. François Derand, Architecte Lorrain. pamph. 8o. *Nancy*, 1868

Bordereau des prix des ouvrages de toute nature, à exécuter pour la ville de Nancy. pamph. 4o. *Nancy*, 1868

NANCY.—Cahier des charges des travaux de toute nature, à exécuter pour la ville de Nancy. [1868-73]. pamph. 4o. *Nancy* 1868

NELSON (C. C.), F.S.A., Fellow.—Nash (J.) The Mansions of England in the Olden Time. Four series. fo. *Lond.* 1839-49

PAICE (B. A.) Asscciate.—Exhibition (International) 1862. Illustrated Catalogue of the Industrial Department, British Section. 2 vols. 8o. *Lond.* 1862

PAPWORTH (Wyatt) Fellow.

Brewer (J. N.) Descriptive and Historical Account of Palaces and Public Buildings, English and Foreign; Notices of their Founders or Builders. 4o. *Lond.* 1810

Nash (J.) Description of Plates of the "Mansions of England." 8o. *Lond.* 1849

Pocock (W. F.) Modern Finishings for Rooms; Series of Designs for Vestibules, Hall, Staircases, Dining Rooms, Libraries, &c. 4to. *Lond.* 1811

PARIS.—The Minister of the Department.—Archives de la Commission des Monuments Historiques. Livr. 115-126. 1868

PARKER (J. H.) F.S.A., Hon. Member.

List of Historical Photographs illustrative of the Archæology of Rome. pamph. 8o. 1868

PARKER (J. H.)—*continued.*

Catalogue of series of Photographs Illustrative of Archæology of Rome. 8o. *Oxford,* 1867

Supplement to Catalogue. pamph. 8o. *Oxon.* 1868

Different Modes of Construction employed in antient Roman Buildings. pamph. 8o. *Rome,* 1868

Photographic Illustrations to accompany Prof. Willis's History of Canterbury Cathedral. 8o. *Oxon,* 1867

Different Modes of Construction in antient Roman Buildings, and periods of introduction. pamph. 8o. *Rome,* 1868

Recent Excavations made in 1868 by the British Archæological Society and Roman Exploration Fund. pamph. 8o. *Roma,* 1868

Rome.—British Archæological Society. Report of Proceedings, 1868-9. pamph. 8o. *Rome,* 1869

PHIPSON (R. M.) Fellow.—Explanatory Remarks accompanying a Design for the Norwich Borough Lunatic Asylum. pamph. 8o. *Norwich,* 1868

POLETTI (L.) Honorary and Corresponding Member, Due dissertazioni intorno alle gente e alle arti primitive d'Italia. 4o. *Roma,* 1838

REVOIL (H.) Hon. and Corr. Member.—Architecture Romane du midi de la France. Livr. 31-45.

ROBINS (E. C.) Fellow.

Oppert (F.) Hospital, Infirmaries, and Dispensaries—Construction, Arrangement, &c. 8o. *Lond.* 1867

Proposed Infirmary at Highgate for St. Pancras Parish; description of design. pamph. 8o. 1868

ROWE (R. Reynolds) F.S.A., Fellow.

Catholic Church—Explanation of the parts of; with a descriptive Chart. [By a Catholic Priest]. 2nd edit. pamph. 18o. 1867

Leach (J. H.) The Parish and Church of Gillingham, Kent. pamph. 12o. 1868

ROHAULT DE FLEURY (G.)

Les Monuments de Pise au moyen age. Text 8o. plates fo. *Paris,* 1866

La Toscane au moyen age, Architecture Civile et Militaire. 8o. *Paris,* 1868-69

SEDDON (J. P.) Hon. Sec.

Elmes (J.) Lectures on Architecture; History of the Art from earliest times to the present day. 4o. *Lond.* 1821

Minns (G. W. W.) Notes upon Rood-Screens. pamph. 8o. *Norwich,* 1867

Society for the Encouragement of Arts, Manufactures and Commerce.—Technical Education; Report of the Committee appointed at a Conference, Jan. 1868. pamph. 8o. *Lond.* 1868

SCOTT (G. G.) New Law Courts; Description of Design. fo. *Lond.* ——

SCIENCE AND ART DEPARTMENT (Secretary of the).—National Portrait Exhibition —Catalogue of the Pictures; (1868). 8o. *Lond.* 1868

SHOPPEE (Charles J.) Associate.—Manilli (I.) Villa Borghese fuori di Porta Pinciana. 12o. *Roma,* 1650

SPIERS (R. Phèné) Associate.—Oxford Architectural and Historical Society. Nos. 10-13. 8o. *Oxon*, 1863-65

TITE (Sir W.) M.P., F.S.A., President.

Westwood (J. O.) Fac-similes of Miniatures and Ornaments of Anglo-Saxon and Irish MSS. fo. *Lond.* 1868

Peclet (E.) Traité de la Chaleur, considerée dans ses applications. 3rd edit. Text 8o. plates 4o. *Liège* 1843

TRANSACTIONS AND PROCEEDINGS OF SOCIETIES.

Edinburgh Royal Society.—Transactions. Vol. XXV., part 1. 1867-68

——————— Proceedings. Vol. VI. 1867-68

Essex Archæological Transactions. Vol. V. 1868

Liverpool Architectural and Archæological.—Proceedings. 5th Session. 8o. *Liverpl.* 1868

Liverpool Literary and Philosophical Society.—Proceedings. 1866-68

London.—Antiquaries—Society of, Archæologia. Vol. XL and XLI., part 2. 4o. *Lond.* 1868

——— Engineers, Institute of Civil.—Proceedings. 8o. *Lond.* 1868-69

——— Royal Geographical Society.—Proceedings. 8o. *Lond.* 1868-69

——— Royal Institution of Great Britain.—Proceedings. 1868-69

——— Royal Society of Great Britain.—Proceedings. 1868-69

——— Photographic Society (The).—Journal of Proceedings. 1868-69

——— Surveyors, Institution of.—Transactions. 1868-69

London and Middlesex Archæological.—Transactions. Vols. I.-III. 8o. *Lond.* 1868

Manchester Numismatic.—Proceedings. Part 6. 8o. *Manch.* 1868

Royal Engineers (Officers of the). Vol. XVII. 8o. *Woolwich*, 1868

VALE (H. H.) Fellow.

Architectural and Archæological Sketch of the Romano-British period at Wroxeter. pamph. 8o. *Liverpl.* 1868

Archæology of the Peak of Derbyshire. pamph. 8o. *Liverpl.* 1867

Abbey Ruins of the Severn Valley. pamph. 8o. *Liverpl.* 1868

Antiquities of Iona. pamph. 8o. *Liverpl.* 1869

VESPIGNANI (Il Conte) Honorary and Corresponding Member.—Montani (F.) La Confessione della Basilica Liberiana rinnovellata di Papa Pio Nono. fo. *Roma*, 1867

VIOLLET-LE-DUC (E) Hon. and Corr. Member.—Dictionnaire raisonné de l'Architecture Française du XI^{e} au XVI^{e} siècles. Vols. 8, 9, 10. 8o. *Paris*, 1866-68

WARING (J. B.) Fellow.

Leeds.—National Exhibition of Works of Art (1868). Official Catalogue. 8o. *Leeds*, 1869

Westwood (J. O.) Fac-similes of Miniatures and Ornaments of Anglo-Saxon and Irish MSS. fo. *Lond.* 1868

WILLIAMS and NORGATE (Messrs.)—Reinwald (C.) Catalogue Annuel, 1867, de la Librarie Française 8o. *Lond.* 1868

WORTHINGTON (T.)

Hospital Construction; in an Account of the Chorlton Union Hospital, near Manchester. 4o. *Lond.* 1867

New Town Hall, Manchester; general Description of Design. fol. *Manch.* 1868

WYATT (Sir M. Digby) F.S.A.

Diéterle (J.) et Wyatt (M. D.) Rapport sur les ouvrages de tapissier et de décorateur à l'Exposition Universelle de 1867. 8o. *Paris,* 1867

Wyatt (M. D.) Report on Arts of Decoration at International Exhibition, Paris, 1867. 8o. *Lond.* 1867

WYMAN (Messrs.) The Publishers.—Architects' Engineers' and Building Trades' Directory. 8o. *Lond.* 1868

PROCEEDINGS AT THE ORDINARY AND OTHER GENERAL MEETINGS, PAPERS READ, &c.

From the 4th of May, 1868, to the 19th of April, 1869, inclusive.

4th May, 1868.—*Annual General Meeting.*—A Resolution was unanimously passed to present an Address of condolence and sympathy to Her Most Gracious Majesty, the Patroness of this Institute, on the occasion of the recently attempted assassination of His Royal Highness the Duke of Edinburgh.

The Annual Report of the Council was read, amended and adopted.

The Balance Sheet and Supplementary Balance Sheet, having been approved by the Auditors, were adopted.

The Meeting then proceeded to the Election of the President, Vice-Presidents, Honorary Secretaries, Ordinary Members of Council and other Officers for the ensuing twelve months.

Examiners, under the Metropolitan Building Act, 1855, were also elected for the ensuing year.

Votes of thanks were passed to the President, Vice-Presidents, Honorary Secretaries, and to the other Office Bearers, for the services rendered by them to the Institute during the past twelve months.

18th May, 1868.—*Ordinary General Meeting.*—The decease of William Roe, jun., Associate, of 3, Smith Street, Chelsea, was announced.

The Address of condolence to Her Majesty the Queen, on the occasion of the recent attempted assassination of H.R.H. the Duke of Edinburgh, was read.

Mr. J. P. Seddon, Hon. Sec., called the attention of the Meeting to some Plans of Hospitals in Paris, Munich and St. Petersburgh, exhibited by Dr. Oppert, who had promised to read a paper, descriptive of them, at the next Ordinary General Meeting.

Paper read: "On the Foreign Artists employed in England during the Sixteenth Century, and their influence on British Art." By M. Digby Wyatt, Fellow.

8th June, 1868.—*Ordinary General Meeting.*—Mr. J. P. Seddon, Hon. Sec., announced that Mr. M. E. Hadfield, Fellow, had presented the Institute with Two Shares in the Architectural Union Company.

The Chairman read a letter from the Home Secretary, in answer to an Address of condolence and sympathy, which had been forwarded to Her Majesty on the occasion of the attempted assassination of H.R.H. the Duke of Edinburgh.

A letter was read from Mr. G. Grove, acknowledging the receipt of £ 50. 3*s*., subscribed by Members of the R.I.B.A., in aid of the Palestine Exploration Fund.

Papers read: "A short Description of the Fall of the Cupola over the Leopoldstädter Basilica, at Pesth." "Upon the Force of Wind, causing the Fall of a Pinnacle at Offenberg, near Strasbourg." By Prof. Laing, Hon. and Corr. Member. "Some critical Remarks on M. Digby Wyatt's Paper." By E. C. Robins, Fellow.

A Discussion took place on the paper read by M. Digby Wyatt, Fellow, on the 18th May, 1868, viz.: "On the Foreign Artists employed in England during the Sixteenth Century, and their influence on British Art."

22nd June, 1868.—*Closing Ordinary General Meeting.*—The decease of E. C. S. Blake, Fellow, and T. T. Mardon, Associate, was announced.

Papers read: "On the Terra Cotta Work adopted in the New Alleyne College, Dulwich." By Charles Barry, V.P. "A short Description of the Plans of Hospitals at Paris, Munich and St. Petersburgh." By Dr. Oppert.

2nd November, 1868.—*Opening Ordinary General Meeting.*—The decease of the following Members was announced: T. G. D. Allason, of 1, Connaught Square, Hyde Park, Fellow, and George R. Burnell, of 32, Bedford Row, W.C., Fellow.

The President, W. Tite, M.P., delivered an Opening Address.

16th November, 1868.—*Ordinary General Meeting.*—A Discussion took place on the Paper read by Charles Barry, V.P., on the 24th June, 1868, viz.: "On the Terra Cotta Work adopted in the New Alleyne College, Dulwich."

30th November, 1868.—*Ordinary General Meeting.*—The retirement of Ignatius Scoles, Associate, from Membership of the Institute was announced.

Paper read: "On Mosaic Decoration." By A. H. Layard, M.P., Hon. Fellow.

Several Specimens of Modern Mosaic Work, executed by Salviati and Co., as well as some Drawings made for publication by the Arundel Society, and Sketches by Prof. T. H. Lewis, Fellow, illustrative of the subject of Mr. Layard's paper, were exhibited at the Meeting.

14th December, 1868.—*Ordinary General Meeting.*—The decease of the Rev. J. L. Petit, M.A., Hon. Fellow, was announced.

Paper read: "Notes on the Celtic, Roman, Moorish, and other Architectural Remains in Algeria." By Prof. T. H. Lewis, Fellow.

4th January, 1869.—*Ordinary General Meeting.*—The retirement of J. G. Weightman, Fellow, from Membership of the Institute was announced.

The decease of John Clarke, Fellow, late of 2, Great James Street, W.C., was announced.

Papers read: "A descriptive Sketch of the New House at Humewood, Co. Wicklow." By W. White, Fellow. A Communication from Prof. Donaldson, P.P., Hon. Sec. For. Corr. (dated "On the Archipelago, *en route* from Athens to Trieste.")

18th January, 1869.—*Ordinary General Meeting.*—The decease of the following Members was announced: Arthur Ashpitel, Fellow, of 2, Poet's Corner, Westminster; George Smith, Fellow, of 4½, Frederick's Place, Old Jewry.

The Chairman announced that Mr. J. Fergusson, Fellow, in consequence of his appointment as Secretary to the Commissioners of Her Majesty's Works, &c., had retired from the Council of the Institute.

Enquiry having been made as to what course the Council of the Institute had adopted in reference to a recent communication from the Metropolitan Board of Works, it was after some discussion

Resolved—"That the Report of the Committee on the Metropolitan Buildings and Management Bill, as well as the 'Remarks and Suggestions' drawn up on the same subject by the District Surveyors' Association, be printed for general circulation among Members of the Institute, and that in place of the Ordinary General Meeting on Monday, the 1st February, 1869, a Special General Meeting, of Members only, be summoned on that evening, to consider the Report of the Committee."

The Chairman called attention to some Specimens of Ornamental Zinc-work intended for Architectural Decoration, manufactured by Messrs. Schaefer and Hauschner of Berlin, and exhibited by their London Agent, Mr. Mullar, of 11, Old Jewry Chambers, Poultry, E.C.

Paper read: "A Development of the Theory of the Architecturesque." By Prof. Kerr, Fellow.

1st February, 1869.—*Special General Meeting.*—The Notice convening the Meeting (in conformity with the Resolution passed at the last Ordinary General Meeting, 18th January, 1869), was read.

In reference to the Resolution passed at a Special General Meeting, on Monday, 30th March, 1868, with respect to the question as to whether Past-Presidents of the Institute could with legality be invited to attend all Meetings of the Council, the Chairman announced that Mr. F. Ouvry, Hon. Solicitor to the Institute, had been consulted on the subject, and had expressed his opinion that Past-Presidents could not, consistently with the Charter, be so invited.

The Meeting having proceeded to consider and amend the Report of the Committee on the Metropolitan Buildings and Management Bill, it was

Resolved—"That the Report so amended be adopted and re-issued to Members, and that a copy be transmitted to the Metropolitan Board of Works."

"That while this Institute recognizes the importance of making certain modifications in the Building Act of 1855, proposed and embodied in the Metropolitan Buildings and Management Bill now under consideration, it is of opinion that there are no adequate grounds for such a complete alteration of the Act as that which would be involved by the adoption of the Bill in its entirety."

15*th February*, 1869.—*Ordinary General Meeting.*—The Chairman stated that, in consequence of the intervention of a Special General Meeting, on the 1st of February, and in order to conform with *Bye-Law* 56, *Section XVII.*, the Special General Meeting for the award of the *Royal Gold Medal* (subject to Her Majesty's approval) and for the award of the Institute *Medals and Prizes* would be postponed until Monday the 5th of April, 1869, five weeks previous to which, viz.—on Monday the 1st of March, the nomination by the Council of the "Foreigner (not being an Architect)" recommended for the award of the Royal Medal, would be announced.

The Chairman also reported that out of Eleven Candidates who had submitted Drawings and Testimonials, Mr. John Cotton, of Slawson Street, Leicester, had been elected by the Council the Pugin Travelling Student for 1869; and that the Drawings of Mr. W. H. Syme, of 21, Gerrard Street, Islington, another candidate for the Studentship, had been "honourably mentioned."

The Drawings and Sketches submitted by the various Candidates were exhibited at the Meeting.

A letter was read from Mr. Edward H. Burnell, stating that in conformity with the wishes of his brother, the late George R. Burnell, Fellow, he had presented to the Institute Works on Æsthetics 'to the value of £ 10.' selected from Mr. G. R. Burnell's Library, and that he had supplemented the donation with certain other works presented by himself.

Paper read: "On the Science of Colour." By Wm. Benson, Esq.

1*st March*, 1869.—*Ordinary General Meeting.*—The President (W. Tite, M.P.) announced the recommendation of the Council, that, subject to Her Majesty's gracious sanction, the Royal Medal for 1869 be awarded to Professor C. R. Lepsius, of Berlin, at the Special General Meeting, to be held on Monday, the 5th April next.

A Series of Architectural Designs and Drawings by the late J. Bonomi, A.R.A., Architect, were presented to the Institute by the Family of the late C. H. Smith, Honorary Member, per W. Papworth, Fellow.

Papers read: "A Memoir of Joseph Bonomi, Architect and A.R.A., with a description of his design for 'Rosencath,' &c." (illustrated by many original drawings). By Wyatt Papworth, Fellow. "Some Account of the Chevalier Da Silva's work, 'Signes qu'on voit gravés sur les Anciens Monuments du Portugal,' and of Mason's marks generally." By George Godwin, Fellow.

15*th March*, 1869.—*Ordinary General Meeting.*—The decease of the following Honorary and Corresponding Members was announced:—Il Cavaliere Clementi Folchi, of Rome, and Rodolfe Vantini, of Brescia.

The Chairman announced that as there were not any applicants for the Voluntary Architectural Examination of 1869, the Examination would not be held this year.

Papers read: "A Letter from Rome," addressed to the President, W. Tite, M.P., by Professor Donaldson, P.P., &c. "On the Criticism of Architecture, with Remarks on Architectural Exhibitions." By E. Ingress Bell, Associate.

5th April, 1869.—*Special General Meeting.*—The recommendation of Council respecting the award of the Royal Gold Medal for 1868-69 having been approved, it was unanimously—

Resolved—"That it be humbly submitted for Her Majesty's gracious consideration that the Royal Gold Medal for the year 1868-9 be awarded to Prof. C. R. Lepsius, of Berlin."

The Report of the Council on the Designs, Drawings, and Essays submitted in competiton for the Medals and Prizes of 1868-9, was read and adopted, and in reference to the award of the Soane Medallion, it was—

Resolved—"That the sum of £50. be now and in future awarded to the successful Competitor for the Soane Medallion, subject to conditions of Continental study, but without the discretionary reservation hitherto made; that the Competition remain open, as heretofore, to all members of the profession under the age of thirty years; that a residence of *six* months abroad for architectural study shall be in future sufficient qualification for the additional award of £50. provided that the Soane Medallist enters on that study within *two* years after receiving the Medallion."

The list of subjects, with amended conditions, proposed by the Council, for the Medals and Prizes of 1869-70, was read and adopted.

In reference to the Voluntary Architectural Examination, the following Resolutions were carried—

1. "That passing the Voluntary Examination ought to be followed by advantages such as will promote the advancement in life and in the profession of the Student."

2. "That each Candidate who passes the Examination should receive a formal acknowledgment of his having passed."

3. "That passed Students in the Class of Proficiency should become, *ipso facto*, Students of the Institute, without further payment, for as many years as they have paid guineas."

4. "That the names of Candidates who have passed in the Class of Distinction be formally notified, by the Secretary, to the Board of Examiners, for District Surveyorship Certificates, when such Candidates present themselves for Examination before that Board."

It was also Resolved—

5. "That it be referred to the Council to determine the manner in which the recommendation embodied in Resolution No. 2, shall be carried out."

The Chairman announced that Messrs. G. G. Scott, R.A., G. E. Street, A.R.A., and A. Waterhouse, Fellows, had been elected Honorary Members of the Imperial Academy of Fine Arts at Vienna.

19*th April*, 1869.—*Ordinary General Meeting.*—The retirement of Alfred Burton, Associate, of St. Leonards-on-Sea, from Membership of the Institute, was announced.

The President having read a letter from Major-General Sir Thomas M. Biddulph, K.C.B., communicating Her Majesty's gracious approval that the Royal Gold Medal for 1868-9 should be awarded to Professor C. R. Lepsius, of Berlin; and Professor Donaldson, P.P., Hon. Sec. F. C., having read the translation of a letter from Professor Lepsius, acknowledging the honour conferred upon him, and regretting that his official engagements at the University of Berlin prevented him from coming to England to receive the Royal Medal in person,

The President presented the Royal Medal, in due form, to the Baron de Schmidthals, Secretary to the Prussian Embassy, who attended the Meeting to receive the Medal on behalf of his fellow-countryman, Professor Lepsius.

The President then presented the Institute Medals and Prizes for the year 1868-69, as follows:—

To Mr. Henry L. Florence, of 16, Christchurch Road, Notting Hill. The Soane Medallion.

To Mr. Edward J. Roche, of 2, Unity Street, College Green, Bristol.
Mr. Beresford Hope's Prize of £ 10s. 10s.

To Mr. Thomas C. Wilberfoss, of Wetwang, near Driffield, Yorkshire.
The Institute Silver Medal and £ 5. 5s.

To Mr. Edmund B. Ferrey, of 42, Inverness Terrace, Kensington Gardens. A Medal of Merit.

To Mr. Thomas E. Williams, of 67, Victoria Street, S.W. A Medal of Merit.

To Mr. William Howes, of 10, John Street, Adelphi. A Medal of Merit.

To Mr. Andrew S. Bird, of 37, Guildford Street, Russell Square. The Student's Book Prize.

To Mr. Henry D. Shepard, of 34, Tavistock Square, W.C. The Institute Medal.

To Mr. Thomas A. Britton, of 1, St. James's Park, West Croydon. A Medal of Merit.

To Mr. Edward Locke, of Southfields, Sutton, Surrey. The Special Essay Prize of £ 10.

The President announced that Professor Donaldson, P.P., Hon. Sec. For. Corr., had been recently elected an Honorary Member of the Imperial Academy of Vienna.

Paper read: "A Notice of the Professional and Literary Works of the late A. Ashpitel, F.S.A., Fellow." By Wyatt Papworth, Fellow.

PAPERS

READ AT

The Royal Institute of British Architects.

SESSION 1869-70.

USUI CIVIUM, DECORI URBIUM.

LONDON:
PUBLISHED AT THE ROOMS OF THE INSTITUTE, 9, CONDUIT STREET, HANOVER SQUARE. W.
1870.

[ENTERED AT STATIONERS' HALL.]

The right of Reproduction and Translation is reserved by the Council.

DRYDEN PRESS:
J. Davy & Sons, 137, Long Acre, London

TABLE OF CONTENTS.

TITLE.	AUTHOR.	DATE.	PAGE.
Opening Address	Sir W. Tite, M.P. President.	Nov. 1st, 1869	1 — 8
A Sketch of the Early History of Roman Architecture (as illustrated by recently discovered Mural Remains).	By J. H. Parker, M.A., Oxon, Hon. Member.	Nov. 15th, ,,	9 — 21
Description of the Apomecometer, for Measuring inaccessible Heights and Distances.	By Richard C. Millar, Associate.	Nov. 15th, ,,	22 — 24
On some of the Differences of Style in Old Buildings.	By G. E. Street, A.R.A., F.S.A., Fellow.	Nov. 29th, ,,	25 — 46
On Public Mortuaries for Large Towns.	By William Hardwicke, M.D.	Dec. 13th, ,,	47 — 53
The System of Tents and Barracks in Hospitals.	By Dr. Oppert	Dec. 13th, ,,	54 — 55
Calculations of Crushing Weight . .	By Professor Kerr, Fellow.	Dec. 13th, ,,	56 — 58
On the History and Restoration of Holkham Church, Norfolk.	By James K. Colling, Fellow.	Jan. 17th, 1870	59 — 70
On the Ornamental Features of Arabic Architecture in Egypt and Syria.	By John D. Crace, Contributing Visitor.	Jan. 31st, ,,	71 — 90
A Summary of Mr. Ruskin's Earlier Architectural Criticism.	By Elijah Hoole, Associate.	Feb. 14th, ,,	91 — 104
Some Notice of the Celebrated Inscriptions, commonly called the Testamentum Augusti, in the Temple of Augustus and Rome at Ancyra.	By Prof. Donaldson, P.P, Hon. Sec. For. Cor.	Feb. 28th, ,,	105 — 109
On Autograph Drawings of the Great Masters of Architecture.	By the same.	Feb. 28th, ,,	110 — 120

TITLE.	AUTHOR.	DATE.	PAGE.
Memoir of the late William Burn, Fellow.	By Prof. Donaldson, P.P.	Mar. 28th, 1870	121 — 129
On the Desirability of Restoring Churches of the Italian Style of Architecture .	By the Rev. E. L. Cutts, M.A.	Mar. 28th, ,,	130 — 143
Brief Memoir of the Commendatore Poletti, Hon. and Cor. Member . .	By Prof. Donaldson, P.P., Hon. Sec. For. Cor.	Mar. 28th, ,,	144
Presentation of Royal Gold Medal and Prizes.	.....	May 2nd, ,,	145 — 146
Preliminary Proceedings, *re* E. M. Barry and the Office of Works.	.....	May 2nd, ,,	147 — 150
Cologne Cathedral	By W. Burges, Fellow.	May 2nd, ,,	150
On some Ancient Irish Churches . .	By Arthur Hill, B.E., Asso.	May 2nd, ,,	151 — 159
On the Admeasurement of Sky in Cases of Light.	By E. Wyndham Tarn, M.A. Associate.	May 2nd, ,,	160 — 170
Case of Mr. E. M. Barry, R.A., and the Office of Works.	.....	May 9th, ,,	171 — 194
On the Taj Mahal at Agra	By W. Emerson, Associate.	May 30th, ,,	195 — 203
On a Scroll from the Church of St. John the Baptist, Chelmorton, County of Derby.	By Fairless Barber, F.S.A.	May 30th, ,,	204 — 206
On some recently discovered Examples of Ecclesiastical Decoration.	By J. P. Seddon, Hon. Sec.	June 13th, ,,	207 — 208
Suggestions on the Architectural Voluntary Examination of the Institute.	By Prof. Kerr, Fellow.	June 13th, ,,	209 — 222

SESSIONAL PAPERS

OF THE

ROYAL INSTITUTE OF BRITISH ARCHITECTS,

Incorporated in the Seventh Year of William IV.

PATRONESS . . HER MOST GRACIOUS MAJESTY THE QUEEN.
PATRON . . . HIS ROYAL HIGHNESS THE PRINCE OF WALES.

COUNCIL.

President—THOMAS HENRY WYATT.

Vice-Presidents.

EDWARD M. BARRY, R.A. EDWARD I'ANSON. A. WATERHOUSE.

Honorary Secretaries.

Foreign Correspondence—T. L. DONALDSON, Past President. *Home Duties*—JOHN P. SEDDON.

Ordinary Members of Council.

A. W. BLOMFIELD, M.A.
W. BURGES.
H. CURREY.
H. A. DARBISHIRE.
C. FOWLER.
E. W. GODWIN, F.S.A.
J. H. HAKEWILL.
R. KERR.
E. ROBERTS, F.S.A.
R. L. ROUMIEU.
J. P. ST. AUBYN.
G. TRUEFITT.
H. G. AUSTIN.
J. FOWLER.
R. J. JOHNSON.

Auditors—E. A. GRÜNING, Fellow, and E. W. TARN, M.A., Associate.

Treasurer & Banker—SIR W. R. FARQUHAR, Bart., 16, St. James's Street.

Honorary Solicitor—F. OUVRY, 12, Queen Anne Street, Cavendish Square.

Assistant Secretary—CHARLES L. EASTLAKE, Fellow, 9, Conduit Street, Hanover Square.

Librarian—S. W. KERSHAW, M.A., 9, Conduit Street, Hanover Square.

Clerk—EDWARD FREEMAN, 9, Conduit Street, Hanover Square.

LONDON:
PUBLISHED AT THE ROOMS OF THE INSTITUTE, 9, CONDUIT STREET, HANOVER SQUARE, W.

1870.

Royal Institute of British Architects.

SESSION 1869-70.

At the Opening General Meeting, held on Monday the 1st of November, 1869,

SIR WILLIAM TITE, M.P., President, in the Chair.

THE preliminary and formal business of the evening having been concluded, the PRESIDENT rose and said:—

GENTLEMEN,—It now becomes my duty to address to you (which I have the honour of doing in the third year of my presidency) a few opening remarks on the occasion of our meeting together for the beginning of our Session; and first permit me to congratulate the Royal Institute of British Architects, and all who hear me, on the prosperity of the Institute itself. My friend Professor Donaldson and myself are old enough to recollect its beginning; I am happy to tell you at the present moment of its success. The number of persons connected with it—architects and artists in various departments, whether as Fellows, Associates, Students, Honorary Fellows, Honorary and Foreign Correspondents, and so on, amount to no less than 630. We are happy to say the funds and finances of the Institute, notwithstanding the expenses which were incurred in occupying these new premises, are also flourishing. Last year all the expenses were paid, and a considerable sum of money was carried to a reserve fund. These are incidents gratifying to us as men of business as well as artists, and you will therefore feel that I am justified in congratulating you, which I do with much sincerity, on the present position of our Institute.

It is my purpose this evening, though not at any great length, to advert to three particular classes of incidents in connection with this Institute:

Firstly. Its position during the past year, and what it has done during that year.
Secondly. Some slight notice of recent architectural works in London.
Thirdly. Some general considerations in reference to our present position, and the possibility of increased usefulness.

With regard to the first class,—I refer with a great deal of pleasure to the papers that were read here. They were considerable in number, but I will simply refer to those which excited the most interest. The first in order was one by Sir M. Digby Wyatt, "On the Foreign Artists employed in England in the Sixteenth Century, and their influence on British Art." That paper led to a very considerable and useful discussion. We then had the satisfaction of receiving a very interesting and valuable communication from the gentleman who has been lately appointed to the important duties of Ambassador in Spain, the Right Hon. Henry Austen Layard, who found time, notwithstanding the great duties he had to conduct in Parliament and out of it, to attend here one night and give us a very instructive paper "On Mosaic Decoration." I do not know any one who understands that subject so well as Mr. Layard; and I feel that we were all obliged to him for the great pains which he took to prepare that paper, and for the interest and success that followed it. Another paper, by Professor Lewis, "On the Celtic, Roman, Moorish, and other Remains in Algeria," was full of information and evidence of research, embracing, as it did, much of the history of art in that remarkable kingdom. Then there was another paper by my excellent and reverend friend now sitting opposite to

me (the Rev. R. Burgess), "On Stamboul and the Bosphorus." No man is better acquainted with the subject, or has given more attention to all that relates to the history and antiquities of that locality; and we are indebted to no man more greatly than to Mr. Burgess for having at all times communicated the valuable information he possesses on these matters. The last paper I shall refer to is that by my esteemed friend, Professor Donaldson, "On the Tomb of an Ancient Roman Architect in the Villa Volkonski, in Rome, and on some incidents of his Journey in Palestine." All I can say is that our friend made a most remarkable journey during the autumn of last year, and during a considerable portion of the spring of the present year, and I hope he will take an opportunity to furnish us with some further particulars of that journey, and the benefit of his observations in all that relates to architecture, in those remote but interesting parts of the world.

The necrology of the Institute is a subject which perhaps might be left to the Council to record, but there are two personal friends of mine whose lamented deaths I cannot pass over without notice, viz: Mr. Ashpitel and Mr. George Smith, both of whom died in the same month. We have had to regret the loss in the one instance of a most learned and useful man, who gave, and readily gave, a large amount of his time to the Institute. With regard to Mr. George Smith, he was one of the oldest architects of our day. He designed St. Paul's School, and many other buildings in London, and was the architect of the Mercers' Company. I had a great personal regard for him. He died at the age of eighty-seven, and few men have passed from among us more honoured and respected than George Smith.

On March 1st we submitted to the Queen the name of Professor Lepsius as the recipient of the Royal Gold Medal of the Institute for the year. Her Majesty was graciously pleased to approve of our nomination, and I had the honour of presenting the medal to his representative in London. The name of Professor Lepsius is one much honoured by the archæologists and architects of Europe. You all know, through his published works, what he has done in Egypt and Berlin, and I must say I think we did ourselves great credit in nominating Professor Lepsius to receive the honour to which Her Majesty so graciously acceded.

I may here mention that a considerable accession has been made during the past year to the number of our distinguished foreign Associates. It is a singular and unfortunate fact that the name of one of them, the Commendatore Luigi Poletti, of Rome, who restored the fine basilica of S. Paolo fuori le murà, is recorded in our obituary of this evening. The names of the other foreign Honorary Fellows elected last year are Emilio de Fabris, of Florence, Il Cavaliere Prof. Guiseppe Poggi, also of Florence, and Il Conte Francesco Augusto Vespignani, of Rome.

These, I think, are some of the principal incidents, and all that I need trouble you with of the history of the past year in relation to this Institute. We have assisted in some useful matters, and one of them is the fact that a supplementary catalogue of the library has been, with a great deal of care and pains, prepared, and is now ready for the use of every one; and another fact is, that there has been prepared by the Librarian of the Institute, a list of *libri desiderati*, including such works as are much wanted in our library, and which, I hope, will be at some time, and by some means, supplied.

Our friend, Professor Donaldson, has adverted to the dinner which is proposed to be given in Paris, by the architects of that city, to our Honorary and Corresponding Member, M. Viollet le Duc. He now supplies me with another extraordinary fact. It appears that the Imperial Government of France gives every five years, a prize to the best architect or man of science; that prize has this year been awarded to M. Duc, and amounts to 100,000 francs, or £4000. sterling, and I am happy to be able to add, that the gentleman who has received this magnificent award, has appropriated 25,000 francs to found a scholarship for architecture in France; and you will find presently that we had, ourselves, previously attempted to do something of the same kind. It is a remarkable instance of the Imperial liberality, and of the success of our Honorary and Corresponding Member, M. Duc.

I come now to the second subject of my remarks, which is a more difficult one. It is, of course, perfectly impossible for an architect to give an opinion, unless it be a kind and friendly one, of the works of his professional contemporaries; but I may say that, during the past year, we have seen so many remarkable works carried out, that you will expect me—as in my early days it was Sir John Soane's practice—to say a word on what is going on around us, and I am sure my remarks will be received in the spirit in which they are dictated—namely, of good nature, and, I hope, of kindness. I think there are four or five buildings, by members of the Institute, which deserve especial notice. One of these, by our Fellow, Mr. James Pennethorne, is the London University, Burlington Gardens. I have not a word to say, except as to the admirable design of that building. I think it is in every way worthy of the time, the man who built it, and the purposes to which it is devoted. The façade is, perhaps, a little novel in its character. It may be somewhat playful—and this may be said to be an age of playfulness—as well as beautiful; but I am quite sure you will all agree with me in thinking it an eminently successful building. Mr. Pennethorne, late in life, in this, his last work, has, I think, surpassed his previous efforts in the field of architectural design.

I now come to the new rooms of the Royal Academy. Are not they, again, most creditable to their author? They are by our friend, Mr. Sydney Smirke, also a Fellow of this Institute, who may be fairly congratulated on his work. The rooms are elegant, convenient, extremely well ventilated, and they are all that the public can require in a building designed for such a purpose. No doubt eventually there will be a better access to those rooms, when the front buildings, entrusted to Messrs. Banks and Barry, both Fellows of the Institute, are in course of time, completed. With respect to the recent Exhibition at the Royal Academy, we have, as architects, been a little annoyed at being so inadequately represented on its walls. Perhaps the fault is our own, but I have felt that architecture has hardly had justice done to it. The room originally appropriated to this department of art was well enough in itself. Perhaps the drawings sent were not of sufficient interest or merit; and that has been suggested by some people as a reason why the Architectural Exhibition at the Royal Academy was not successful last year; but I am bound to say, that neither in the opportunity of display afforded to us, nor in the exhibition itself, were we successful, and I hope some amongst us, especially the younger members of the profession, will be found to do something to redeem our credit on the next occasion.

I now come to another building, which, I also think, bids fair to be all that could be wished, and that building is the great hospital now in course of erection, from designs by my friend, Mr. Currey, opposite the Houses of Parliament. It would be folly for me, as a governor of that Institution, to say we gave the architect power to spend all the money he pleased upon decoration. We wanted a hospital, and a useful one We stipulated for economy; and I think, when finished, it will be a building, in every sense of the word, worthy of its uses, and, let me add, no inelegant decoration of the metropolis itself. It is based upon the plan of the Lariboisière Hospital in Paris, and, I think, it will be found just as creditable to our friend Mr. Currey, and to the governors who have directed its construction, as it will be useful to the suffering patients who may find shelter beneath its roof.

I now come to the two most important works of the day—Blackfriars' Bridge and the Holborn Viaduct. The latter work has been constructed by Mr. Haywood, who is, in the truest sense, an architect, although he calls himself "architect and engineer." It is in the former capacity that I know him well; and, I think, all we have said and felt about the viaduct bears testimony to his ability. Perhaps I may venture to remark, in all good nature, that the decoration, in my opinion, is a little overdone. The Romans and Greeks built for antiquity—one might almost say, for eternity. I am not sure that that can be said of the architecture of the present day. We have grown to be fond of ornament, gilding and excess of detail, which we do not see in the remains of Greece and Rome,

With regard to the bridge, it is a marvellous work, and most successful in regard to its practical utility. I have on other occasions given my opinion upon the merits of its design. I recollect the bridge which Mr. Mylne built, and I confess that I admired that more than the one we see now. The present bridge is, to my mind, like the viaduct, a little overdone in decoration; but, in both cases, I am bound as a man of considerable experience, to express my admiration at the workmanlike manner in which the materials have been handled. The hardest granites that were procurable, are worked with a dexterity and ability which commands our praise. In the viaduct especially, the granite is almost wrought like joiner's work; and in the case of the bridge, though I do not admire the cornices, the workmanship is beyond all praise, and, together with the polishing of the granite columns, is in every way creditable to the English and Scotch artizans by whom it has been executed.

These are the only criticisms on modern works in which I shall venture to indulge; and I now pass to the third class of the remarks which it occurs to me to make.

We are called upon, as members of this Institute, and in connection with our position in the state, to perform some important duties, and I venture to think those duties are invariably performed with care and assiduity. One of those duties is, the examination of candidates for District Surveyorships. That is now becoming a matter of exceeding importance, which, I will venture to say, is felt and duly appreciated here. We have the duty of returning the names of passed candidates to the Board of Works, with whom the appointment of District Surveyors rests. The Board of Works could, if they pleased, place these examinations in other hands, but they have hitherto been so satisfied with the pains we have taken, that that part of our duty, I hope and believe, has been well performed.

During the past year a proposition was made by that Board to bring a bill into Parliament to repeal the present Building Act. The subject was referred to a Committee of this Institute, and many days were occupied in the consideration of the subject, but on the whole we thought it better to leave well alone. Some changes, no doubt, are required in that Act, but for general purposes we think it will work well, and that it is not desirable to make any great changes in its legal provisions.

We have had, during the year, an application from the London Builders' Society, who have brought under our notice the very grave question of the relations between builders and architects, and have urged upon us a great many changes. Now, it is a singular fact, which my experience supplies me with, that engineers never allow any interference with contractors or builders; they keep the whole of the affairs in their own hands; they also settle questions of payments themselves. For myself I will say it has always been my own practice to allow no interference with my professional duties as an architect. If the work is ill done I interfere, or if the materials are bad I send them away. You will, I am sure, receive this as the experience of a somewhat long life. I have never interfered in any of my buildings with questions of payments. It appears to me where a man has done his work, if any questions arise out of the contract, or anything that has been done for me, he has a perfect right to represent himself or to be represented. It is only fair to hear what he has to say, and it is proper also to refer to some disinterested party. I am glad to find this Institnte, after going into the question, has come to the same conclusion that I have myself, viz., that the architect should dictate solely in the building and architecture, the engagement between himself and the builders as to the amount to be paid for the work, remaining an open question.

The next topic I shall touch upon is a very grave and important one. Our desire, as members of this Institute, must naturally and always ought to be, to encourage architectural education, to make our members wiser, and afford facilities in that direction, so far as we can, to the members of our profession. I think that is not to be done by urging one another who have advanced in life, because our duty is for

the most part done and our task is ended; but we want to encourage and teach the young rising architects. It has been a matter of great anxiety on the part of the Council to promote that object, and when I remind you of the resolutions passed respecting the Voluntary Architectural Examination last session, you will recognise their effort to encourage the youthful architect, to cultivate his genius and talents. The whole direction of architectural education I feel persuaded must be in that way. In that way the Council have considered it, and in that way these regulations have been suggested, which I hope will be firmly and finally carried out, and if they do so I hope architecture will maintain its place in society, and increase its influence in proportion as it increases its talents and usefulness.

Mr. JOHN P. SEDDON (Hon. Sec.) then read the following resolutions, passed at the closing General Meeting of last Session (21st of June, 1869), and based on the suggestions of a general Committee on Architectural Education:—

1.—"That a text-book or pamphlet should be prepared, pointing out where and when (in addition to office instruction) courses of lectures, specially pertaining to the profession, can be attended, and giving a limited number of books in which the best information is to be had."

2.—"That a certificate be granted to all who pass the Voluntary Architectural Examination established by the Institute."

3.—"That a preliminary examination be held at the Institute in elementary subjects, open to all students who have been at least one year in an architect's office, provided that it be not compulsory on those who come up for the Voluntary Architectural Examination."

4—"That the Institute should assist the Architectural Association to carry out the necessary arrangements for a Drawing School, which it was proposed by that Society to establish this Session."

Mr. Seddon added that the preparation of the proposed text-book had been undertaken by Professor T. H. Lewis and Mr. A. Waterhouse, Fellows.

The PRESIDENT continued.—I think it was extremely kind in men so much occupied as my friends Professor Lewis and Mr. Waterhouse to undertake such an important duty, and I want to thank them publicly for doing so, and to say, we believe their exertions and labours will be crowned with success. Both of them are architects, placed in important positions in society, and I believe the information they will bring to bear upon the subject will be of the greatest possible importance to the young men who will have the benefit of their suggestions.

I have only one more topic to notice, and that is that during the past month I think there have been two letters addressed to me personally in the *Building News*. They are very well and thoughtfully written, and they appeal to me on two distinct subjects; I think my opinion on those subjects is pretty well condensed in what I have said just now in regard to our being able to assist the young,—not those who are advanced in life like myself; they must take their chance, and their position as formed for them. The writer seems to think that when a man aims to become a Fellow of this Institute he should be subjected to an examination. I know of no such course having ever been taken in any other professional society, nor can I conceive it would be submitted to in this. A man before he obtains the rank of Fellow obtains a position which his skill, age, and experience warrant, and I do not suppose he would submit to any examination any more than in the case of the Royal Society, or any others. It appears to me the title of "Fellow" of this Institute is valued, because I see it used in all directions, appended to men's names, and I do not believe that anything more can be done in that direction. The other point in the letters to which I have alluded is this,—that Fellows of the Institute should be permitted to measure for builders. There may be something in that worth consideration, but at the same time I think we as architects ought to hold ourselves, as much as we can, distinct from

interests of that character. A man of honor, and a gentleman, can be a man of honor and a gentleman anywhere. A distinct regulation was established at the foundation of the Institute,—*That Fellows should not measure for builders.* It is found there still, and I do not myself feel inclined to disturb it. It is a very distinct practical question, which every man of business can understand and appreciate, but it is not a subject which we can discuss at a large meeting like this.

I think I have now performed my duty in the address I have made to you. I have endeavoured to make the whole intelligible and practical. I am drawing toward the close of life, and I should like the experience I have obtained to benefit as far as possible those who follow me. I think the Institute has become practical and useful in its operations, and in making my bow to you to-night I shall be happy in the thought that I have been the means of contributing in any way to its success.

The President concluded by inviting the remarks of the meeting.

Professor DONALDSON, Hon. Sec. For. Corr.—The President has invited the remarks of those who feel disposed to offer any observations upon the various topics of the speech he has just addressed to us. One more practical or more useful we cannot conceive; he has not enlarged upon subjects not within the reach of all our comprehensions; he has not led us into wide fields of fancy, but has confined himself to the practical parts of our art and science; he has called attention to various topics. I think he has hardly put emphasis enough upon the success of M. Duc, our Hon. and Corr. Member. It was not a prize offered to architects alone, but it was open alike to architects, sculptors and painters, who distinguished themselves during the preceding five years, to whom this great periodical reward of 100,000 francs was offered; therefore it is a matter of pride to us, as professional men, that an architect should have been selected, and that his works should have been approved, so as to have been cited as having merited this high distinction in the empire of Napoleon III. Our friend the President has alluded to several works recently erected in the metropolis; and he has been critical as well as generous in his remarks upon them. He has necessarily been obliged to make selections of a few only, because time would not have allowed him to allude to all the works lately carried out; and he has invited further remarks on that subject. There is one executed last year, now open to public view, which I saw the other day in passing down the Thames,—the work of one of our Fellows, and a great embellishment to the City. I allude to the new building of the Bible Society, erected by our friend Mr. I'Anson. It is a noble production, rising up in the centre of the City, and does honour to the architect, to the Society, and to the art of the present period. I beg to offer my congratulations to him on the success of that fine building. Allusion has been made by the President to the Building Act. I am glad to hear from so good an authority that but little is to be done in touching the existing Act. I believe from my own experience of a quarter of a century, and looking to the manner in which the provisions of the act are carried into operation by my colleagues, that it would be difficult, not to say dangerous, to touch its more material enactments; I am therefore glad to hear that it is not likely to be interfered with. It has been said that the title of Fellow of this Institute is an honourable one; I believe it is regarded as such. It was instituted in the first instance, and intended as the title of a man, who honourably pursued his profession, and a guarantee to the public that a member of this Institute is worthy of the confidence of his employers,—if not, he would no longer be a Fellow. It is not for us to make out the relative merits of this or that professional brother; or to say this one was most distinguished for his practical knowledge; that one could build a house with most taste,—that would be an invidious distinction. All we attest is the capability of a man to carry out a building as a man of science, and likewise with the integrity of an honorable man. Such is the simple title we give to our Fellows, and no other could we guarantee; and in fact no society whatever can go further than that.

When we see an architect occupying the high position of our friend the President, who owes his present rank and position to his own ability and his own great character,—who has risen to the height of

his profession, and taken a parliamentary status in the senate of the empire, we must, I am sure, all feel proud that we have for our President Sir William Tite. I beg leave to propose a vote of thanks to the President for the address with which he has been pleased to favour us.

Mr. G. GILBERT SCOTT, R.A., Fellow. I so entirely agree with the remarks of Professor Donaldson upon the interesting address we have received, that I can second his motion with the utmost heartiness. I sincerely thank our excellent President for the address he has given us. It seems to me thoroughly useful and practical in every way. The only remark that I would make is, that I wish he would devise some means of placing his most extensive and useful experience in a more extended and voluminous form than we can expect in an address from the chair. Sir William Tite's opinions on numerous practical, as well as artistic questions, during his long professional practice, would be very valuable, and there could be no greater boon, amongst the many boons he has conferred upon the profession, than for him to place upon record the results of his most important and extensive experience.

The vote of thanks to the President for his address having been carried by acclamation,

THE PRESIDENT rose and said—I am very much obliged to the mover and seconder of this vote of thanks for the kindness with which they have spoken of me individually. The suggestions of my excellent friend, Mr. Gilbert Scott, really deserves a little consideration; but as long as I am in Parliament, and member for Bath, with 60,000 inhabitants, and appealed to as I constantly am—not in Parliament, but out of it—for advise and consultations of all kinds, I am afraid I cannot definitely promise it. Whether my life will be granted long enough for me to undertake such a duty, I do not know; but I have sometimes thought a good deal of the result of what my friend has adverted to might be conveniently placed in the shape, not of a large volume, but of a compendious manual, as the experiences of a practical man. I am much obliged to him and to my friend Professor Donaldson, whose friendship I have enjoyed for so many years;* I also thank you, gentlemen, who have so kindly received their proposition, and my address, this evening.

The Discussion on the Address having been brought to a close,

Mr. J. P. SEDDON, Hon. Sec., called the attention of the Meeting to some specimens of

GREEK ROSSO ANTICO MARBLE,

exhibited by Madame Melissa Demetrakarakos, and read the following description:

"This marble is brought from a quarry in the Bay of Skutari, on the coast of the Gulf of Laconia, near the Port of Gytheion in the Morea. N: Lat: 36-½. Long before it had acquired in Italy the name of *Rosso Antico*, it was known as "Red Laconian" to the ancients, whose excavations are proved by the large blocks cut by them and never removed, on account of the difficulty of transport across mountains and ravines; but the quarry whence these small specimens are extracted, is situated close to the sea, sloping down into the sheltered and tideless Bay of Skutari; with a village of the same name above. This quarry has not been opened for any excavations of importance, and there is as yet no machinery for lifting *large blocks* which could be cut out, or for shipping them.

The marble becomes richer in colour the deeper it goes into the bed of the quarry, and is found in larger quantities.

Lysandros Kaftangioglou, Honorary and Corresponding Member of this Institute, a Greek architect, who is known to Professor Donaldson, Hon. Sec., For. Corr., sent the following notice, with some specimens, to the Exhibition of 1851, by order of the Greek Government. (See Illustrated Catalogue).

---

* I did not advert to the many elegant buildings of a private character in the metropolis, if I had I should have noticed with much satisfaction Mr. I'Anson's Bible Society, and also the new club recently erected in Pall Mall by our well known Mr. Brandon, which is, I think, one of the finest edifices of its class in the metropolis.

" *Rosso Antico used by the ancients for sculpture and architecture;* The largest pieces of this marble
" are the fourteen steps in the Church of St. Prassede in Rome, which were intended to be
" carried to France to ornament the throne of the Emperor Napoleon I. It was thought, until
" lately, that the place whence it came was unknown; it was however ascertained to be from near
" the sea at Skutari."

Within the last three months this same gentleman has in a letter expressed his hope that this red marble, so much sought by the Romans, who made great use of it, should be again employed for works of decorative architecture—soubassements, interiors of churches, and palaces, inlaid ornament, chimney pieces, standing candelabra in halls, &c.; and also says that the opening of the quarry would be the beginning of a great working—very easy, and not expensive, from its admirable position. Especially as there are facilities for water transport to London, or any other port, direct from the spot.

Rosso Antico is extremely hard and impervious to the effects of climate. Its proximity to iron produces its hardness and colour.

It has been used by Baron Triqueti in the Memorial Chapel at Windsor, and Lord Walsingham for decorative panels in his billiard room. Lord W. is perfectly satisfied with its identity and beauty; and having carefully compared it, sees no difference between it and some ancient pieces in his Lordship's possession, which, he thinks it is more than probable, came from the same locality."

Professor DONALDSON remarked, that very little was known with regard to the marble Rosso Antico, although considerable quantities, were found in Rome in use for decorative purposes, among the objects of art on sale in that city. Milizia describes it, in his *Architettura*, as consisting of two qualities, more or less coralline in depth of colour, and occasionally with white or black spots: he mentions the figure of a wolf wrought in this marble in the Gallery of the Borghese Gardens. Rondelet also notices Rosso Antico, stating that the two columns in the Salle d'Apollon, in the Louvre, are of this material, and once formed part of the tomb of Charlemagne at Aix la Chapelle. Professor Donaldson added, that there were several small-sized statues of the same marble in the Galleries of the Vatican and Capitol at Rome, and that much of it had been used in the churches there, being considered, from its hardness, beautiful colour and rarity, as very valuable. If, therefore, the specimens exhibited were of the same or like quality, the material would be a valuable acquisition for decorative purposes.

A new system of Ventilation, invented and patented by Mr. WILLIAM POTTS, was then exhibited and explained by Mr. POTTS, jun.; and after some discussion on the subject, the meeting adjourned.

Royal Institute of British Architects.

At the Ordinary General Meeting, held on Monday, 15th November, 1869, CHARLES BARRY, Vice-President, in the Chair, the following Paper was read:—

A SKETCH OF THE EARLY HISTORY OF ROMAN ARCHITECTURE,

(AS ILLUSTRATED BY RECENTLY DISCOVERED MURAL REMAINS).

By J. H. PARKER, F.S.A., Hon. M.A., Oxon, Honorary Member.

To fortify our dwellings against enemies or intruders is an instinct of human nature, and from the earliest period of the history of man we find traces of fortifications. The early inhabitants of the earth lived either in caves or huts formed of wicker-work, or wattle-work and wood, with thatched roofs. Such habitations continued to be the usual dwellings of the human race for many centuries, and similar structures are still in use in many parts of the world, and even in some parts of England and Wales, under the name of the huts of the shepherd or the charcoal burner, but with us such habitations are generally used for temporary purposes only.

In Italy the peasantry reside habitually in such dwellings, which, at a little distance, have the appearance of hay stacks or ricks of corn, and it is not until we are close to them that we see that they are provided with an aperture serving the double purpose of a door and window, that they are hollow, and that each is the habitation of a family. Such dwellings are evidently open to every sort of attack, and for this reason they were soon collected together in villages, which afterwards grew into towns. These villages or towns were surrounded by a bank of earth and a wide deep trench, out of which the earth for the bank had been taken. There are often two trenches, one on each side of the bank, and when the town was large the inner trench served as a road for the soldiers to man the walls. On the top of the bank a wall of wood, with wooden towers, was placed, or sometimes a palisade only. These early fortifications were generally placed on the tops of the hills for greater security. The edge of the hill was then cut into vertical cliffs, and the earth or stone that was cut off to make a perpendicular surface, naturally formed a bank or terrace at the foot of the cliff, and below that a second cliff was necessary, with a wall built up against it. This wall was originally of wood only, afterwards of stone. In process of time the summits of nearly all the hills became fortified in this manner, and a whole district of country was fortified by a chain of these fortified hills, and the narrow gorges between them, which were easily defended also. This became what is called a chain of fortresses to defend the borders of a country, and when war was expected, the first thing to do was to prepare these fortresses for defence, and supply them with provisions. We read of such fortresses frequently in the history of the Jews, the earliest authentic history that we possess. Thus when the Jews were expecting to be attacked by Holofernes, the general of Nebuchodonosor, king of Assyria, the first step was to prepare the fortresses, as we read in the fourth chapter of the book of Judith. "Now the children of Israel that dwelt in Judea heard all that "Holofernes, the chief captain of Nabuchodonosor, king of the Assyrians, had done to the nations. ". . . . . Therefore they sent into all the coasts of Samaria and the villages . . . . . And "possessed themselves beforehand of all the tops of the high mountains, and fortified the villages that "were in them, and laid up victuals for the provision of war . . . . . and wrote to those that

" dwelt in the villages that are toward the open country . . . . . charging them to keep the " passages of the hill country; for by them there was an entrance into Judea, and it was easy to stop " them that would come up, because the passage was straight, for two men at the most . . . . . " Then was it declared to Holofernes, the chief captain of the army of Assur, that the children of " Israel had prepared for war, and had shut up the passages of the hill country, and had fortified all " the tops of the high hills, and had laid impediments in the champaign countries: wherewith he was " very angry."

We must bear in mind that at the period of this war the children of Israel were chiefly herdsmen, whose wealth consisted of their flocks and herds, as it had done in the days of the patriarchs. These were driven before them wherever they went, and there was no great hardship in being sent from one pasture to another. Attached to each fortress was an enclosure for the flocks and herds, surrounded by a bank and a trench, which became afterwards either a hedge and ditch, or a wall and a foss, according to circumstances. These were the places of security to which their property could be driven for protection, and no fortress was complete without this accessory: such hill fortresses were called fastnesses, and we read of them continually in Cæsar's Commentaries of his wars in Gaul and Britain. These ancient earth-works were on a gigantic scale, the whole population was employed upon them for mutual defence, and they were never destroyed. They may often have towns or castles built in them at later periods, which to some extent efface their ancient character, but such banks and such trenches as were made in primitive times were never destroyed, and hardly can be destroyed; the bank may be removed in parts, and the trench filled up in parts, but it is sure to leave plain traces behind. The tops of nearly all the hills in England and in Gaul were fortified in this manner, sometimes these great earthworks are considered as natural formations, in other instances they are called Cæsar's camps, because they were afterwards occupied by the Romans, but they were often constructed by the natives to oppose the Roman invasion, as Julius Cæsar plainly tells us. Such ancient fortresses are found all over the world, in the East as well as in the West; in Palestine they are very remarkable, and Jerusalem itself is built on a strong earthwork.

In Italy the fortified villages on the tops of the hills are visible everywhere, sometimes still inhabited, sometimes deserted; before the foundation of Rome all the important high hills had been fortified for many miles round. The Janiculum, the most commanding spot in the immediate neighbourhood, the Quirinal and the Capitol were all occupied, and therefore fortified. The Palatine, the Cælian and the Aventine were not occupied, being so much less strong than the other hills. These were taken possession of by the new settlers. At first the Palatine only, but to make this secure it was necessary to have two wings to it. One to keep up the communication with the Tiber, then the high way for provisions and materials of all kinds. This wing was called the *Velabrum*, and it is probable that boats could sail up to the foot of the Palatine in a sort of port formed by the mouths of the small streams that run down from the Palatine on both sides, and from part of the Quirinal, passing between the Palatine and the Capitol, and the Marrana, or small stream that runs round the base of the Cælian, and then between the Palatine and the Aventine, where it formed a marsh, which served as a protection to the west side of that hill. On the eastern side another protection was necessary, and another wing was formed by digging a great trench at the foot of the Esquiline, leaving a space for a fort to defend the approach in that side. This wing was called the Velia, and on this the great Basilica of Constantine and the arch of Titus were afterwards built. The trench remains with the earth, supported by a wall on each side of it, and in this trench is a road, now called Via del Colosseo. This trench is about twenty feet below the level of the ground, and forty feet wide; it has a row of houses down the eastern side of it, and the present road or street on the western side. The cliff on each side is vertical, and sup-

ported by a wall, and trees may be seen growing on the ground, nearly level with the top of the wall on each side. On the west side of this trench is the earthern fort, which is nearly triangular, and one corner of it is cut away to admit the great Basilica of Constantine. This and the Arch of Titus opposite to it stood on the Summa Via Sacra, from which the Clivus Sacer descended to the Via Sacra, and the Forum Romanum on the north.

To the south another road descends rapidly to the Colosseum and the arch of Constantine. This appears to have been afterwards made a covered way by the buildings over it, but the incline or *Clivus* is probably natural or very antient. The Arch of Titus, therefore, stands close to the natural position for the principal gate of the city of Romulus on the Palatine, and there are remains of a very early gate on this spot. From thence the road would turn at an angle up to the platform on the surface of the Palatine. This hill has so long been built over, and the buildings renewed so many times, that it is difficult to see the original plan. Nevertheless, the demolition of the buildings, and the excavations, have brought a great deal of it to light. It is easy to see that the upper part of the hill has had the edges cut into vertical cliffs, with terraces under them, as in other primitive fortifications. The natural soil here being friable, the cliff required to be supported, and this would commonly be done at first with wood only, but Romulus appears to have begun a stone wall immediately. Part of this wall remains at the north end towards the west, and round the corner on the west side, near the church of S. Anastasia. The architectural character of this wall is exactly the same as that of Fiesole, and other Etruscan cities, where the building material is the same.

This kind of stone, called *tufa*, naturally splits into oblong blocks of large size, and of these blocks the walls are built; the stone has only been split off the rocks, not cut with the saw, and there is no original cement, or at least no lime mortar. Along the north end of the hill, opposite to the Capitol, the foundations of towers of the same period remain at regular intervals, evidently left unfinished and built over in the time of the Republic, of the Empire, and in the Middle Ages; but all these buildings being now destroyed, the original foundations have been brought to light. These foundations have only been excavated within the last few years. They are shewn in some of my photographs, with walls of the time of the Republic and early Empire built upon them and in them. They extend along the whole of the north end of the Palatine, opposite the Capitol, and appear to have never been completed, probably, in consequence of the peace with the Sabines. This north end of the Palatine was the Arx or Citadel of Romulus, that was betrayed by Tarpeja to the Sabines on the Capitol opposite. There was a zig-zag road up the cliff, at the north end of the hill, leading from the spring where S. Georgio in Velabro now stands, and where the Janus or Arcus Quadrifrons is placed.

This was the boundary of the Palatine fortress in that direction, and the zig-zag path led up from that to the Porta Romana, near the east end of the north front. On the west side there are remains of the old stone wall in several places, over S. Anastasia as well as under it. After passing the south end of that church the wall turns to the east, across the Palatine, towards the Arch of Titus; part of this wall on the south side of the Citadel of Romulus is visible in the Pontifical part below the cliff, on the terrace, and another part in the Farnesi gardens, now occupied by the Emperor of the French. It supports the cliff on the north side of the foss, and the Villa Mills stands on the cliff on the south side of this foss, but no tufa wall is visible there; on that side of the foss the earth is supported by a concrete wall only. In this great foss (which Signor Rosa considers to be a natural *intermontium*) various buildings had been erected in the time of the Republic and down to the time of Augustus. The later Emperors carried their great palace where the state apartments for the grand ceremonies were situated, over the foss on a level, and made subterranean chambers of the old buildings that stood there before.

The southern part of the Palatine (now being excavated by the Pope), with the Velia and the Velabrum, formed the City of Romulus as distinct from his Citadel (which now belongs to the Emperor

of the French, and is being excavated by him). The Cælian was soon added to it, and the Aventine taken possession of as a pasture ground. This was not so strongly defended as the Citadel and the City. There was no outer wall or *moenium* made to it, the natural position being sufficiently strong for the purpose. For this reason there was no *Pomœrium*, or *Post-mœnium*, to the Aventine, until the time of Claudius. The *Pomerium* was originally a local technical name for the *Slype* behind the wall and the foss, and as the cliffs of the Aventine were the defence, there was no outer wall to it until that time.

When the union with the Sabines took place, the Capitol, the Quirinal, Viminal, and Esquiline were added to the city, and these, with the three previously occupied, made the seven hills. The Janiculum was a separate fortress connected with the city by a covered way, that is a road in a foss or trench, with a bank by the side to protect it. The seven hills were combined into one fortified city by the later kings, the two Tarquins and Servius Tullius. The plan adopted was to make use of the existing hill fortresses, and connect them together by a short agger, or bank and foss, across each of the valleys; this connecting wall was brought high up to the valley, in order that the outer part of the early hill fortress might serve to protect the approach to a gate. The one from the Esquiline to the Cælian passes under the north end of the Church of S. Clement, where it has been excavated by Father Mullooly, and remains visible. The one from the Cælian to the Aventine is not far from the Palatine and the Circus Maximus. It was excavated in 1868 and 1869, under my direction, and the remains of the Porta Capena found in it. The sill of that gate, which remains *in situ*, is only three yards wide; this is in accordance with the laws of the twelve tables, and it will be remembered that in the hill fortresses of the Jews, there was room for only two persons to pass at the gates.

Another short agger must have gone across the valley from the site now occupied by S. Sabba to S. Prisca, if the valley which divides the Aventine into two parts is natural. There is some doubt whether it is not a great trench, as there is no natural stream of water through it, though the aqueducts were afterwards carried through it. The Tiber then became the boundary of the city as far as the Capitol, and against the bank of the river a tufa wall was built by the kings, called the "*Pulchrum Littus*," part of which remains visible with the mouths of the Marrana, and of the Cloaca Maxima left in it. The arches over each of these openings are of later date than the sides. That over the Marrana is mediæval, with a mill built over it, the wheel turned by the stream of the Marrana. That of the Cloaca Maxima is of the time of Camillus, after the capture of Veii, and is of cut stone, inserted in the older wall of tufa.

Another short agger went from the Tiber to the west end of the Capitol, with three gates in it, and one more from the east end of the Capitol to the Quirinal; then the cliffs of the Quirinal complete the circuit of the city. The ground at the foot of the Capitol is so entirely built over and altered by modern streets, that these two short aggers cannot now be traced. The great foss on the north side and at the two ends of the Capitol can be traced: the part at the west end was widened by Trajan to make his forum in it. But on the eastern side the three hills (called *Colles*) are only promontories from high table land, and on this side the great agger of Servius Tullius was made for more than a mile, connecting the cliff at the north end of the Quirinal to that on the east side of the Esquiline. This completed the fortifications of the city proper, but it was usual in all fortifications to have a wall of enclosure called an *enceinte*, forming a double line of defence; and Tarquinius Superbus, the last of the kings, began another great agger, parallel to that of Servius Tullius, but some distance to the east of it. On this bank the aqueducts were afterwards carried and the wall of Aurelian was built. This great external fortification was of much greater extent than was required for the population of Rome at that period, and the enormous labour required for it caused the great rebellion, under Brutus, which ended in the establishment of the Republic. The agger of Servius Tullius has long been considered as an established historical fact, and it can be distinctly traced along its whole length. Part of it was destroyed in

making the railway which cuts through it obliquely, and at this point part of the bank, faced with the wall of tufa is left visible, and the great inner foss, with a paved road at the bottom of it, twenty feet below the surface, was shewn in digging the foundations of the new railway station. A street of the time of the early Empire had been made on each side of this agger, or bank of earth. The backs of the houses were built into the bank, which was excavated for the purpose, so that there were no back windows to the houses. From this cause the agger was, in this part, entirely concealed in the time of the Empire, and it is only the demolition of the houses that has brought it to light again. The remains of some of these houses were excavated, in 1868 and 1869, by four of the young Roman Princes, who united for that purpose.

The great outer agger of Tarquin is disputed by some of the local antiquaries, but it is perfectly evident that the high wall of Aurelian is built upon older fortifications of less height, called *Mœnia*. This was a bank and foss faced with a wall of tufa; this stone wall was destroyed in making the high wall, but the old stones were used in many parts, and several of the gates are before the time of Aurelian, as shewn by the construction and by inscriptions upon two of them. The wall of Aurelian is in parts also built against a scarped cliff, in many places the ground being from ten to twenty feet higher within than it is in the road on the outside of the wall.

We must not conclude that, because the great fortification was faced with a stone wall, the inhabitants of Rome, in the time of the kings, lived in stone houses. On the contrary, it is recorded that the house of Romulus was a wooden hut only. This was carefully preserved until the time of the Empire, and had been seen by one of the writers who mentions it. The only stone buildings within the walls were a few temples, the houses were entirely of wood, and most of the temples also. At that early period stone temples were quite the exception, even in the most civilized countries. When a great deal of ornament was used in their buildings, the ornament was of wood or of bronze, *not of stone*. In the temple of Solomon at Jerusalem, the earliest building of the kind of which we have any record, all the ornamentations were of cedar-wood and bronze. The walls were of large blocks of stone, very similar to those of the walls of the kings at Rome, only larger, and as a general rule the older a wall is the larger the stones are, but this must of course depend on the building material.

In the remains of the other fortified cities of the early period, such as Fiesole and other Etrusean cities, or in the cities of the Latins, such as Gabii, we do not find any remains of houses; there are commonly one or two temples, not of such early character as the walls, and sometimes a fortified palace or *arx*, but the houses were mere huts. The modern village of huts only, which may now be seen within the walls of Gabii, and is shewn in one of my photographs, is probably of exactly the same character as that of their predecessors three thousand years since. It was, therefore, no great hardship for people in such a state of civilization to be removed with their flocks and herds from one city to another, wherever safe fortifications for their families and pasture for their cattle were provided; they were contented to go or remain. This accounts for the rapid rise in the population of Rome; the Romans for several centuries adopted the plan of transferring the inhabitants of the conquered cities to Rome, their flocks or herds were added to those of the Romans, and increased the wealth of the city.

Many of the original cities conquered by the Romans have never been inhabited since; their walls remain, but the walls only, or they are *nearly* all that remains. Sometimes a Roman colony has been settled within the old walls, probably in part to defend them, and hinder an enemy from making use of them. They were sometimes inhabited in the middle ages also, as at Gabii, where we have a mediæval church made out of a tomb of the first or second century. At Veii the *insula* was originally a detached fortress to defend the approach to the city; this became a village, and is still inhabited. Collatia became a mediæval castle, now called "Lunghezza." In other cases, as at Fidene, the scarped cliffs and traces of

the gates are all that remains visible. It was not until after the introduction of lime mortar into general use that houses of stone began to be built, and then public buildings were erected before private houses. Lime mortar is supposed to have been a Greek invention; it was not brought into use in Rome until after the time of Camillus and the capture of Veii and the subjection of Etruria. We have no evidence of the use of lime mortar in any other places at any earlier period. It was either a Roman invention or was very soon introduced there, and brought into use. There is no lime mortar in the early Grecian temples, nor in eastern countries at any earlier period. Brick came into use in Rome very soon after lime mortar. The earliest walls with mortar are of rough stone only, and with a profusion of mortar, but they soon began to face these rough stone walls, called *concrete*, with brick to give them a smooth surface. They also, at an early period, used small blocks of tufa cut into the shape of bricks, but usually of rather a larger size, and these blocks continued in use for some time simultaneously with bricks. We read of bricks at a much earlier period, both sun-dried and kiln-dried, but the bricks of Babylon and other earlier cities were cemented with bitumen only, or sometimes with slime or mud, where bitumen was not to be had.

The earliest wall in Rome built with lime mortar is the high concrete wall at the north end of the Palatine supporting the cliff near the middle of that end of the hill. This has been built of rough stones, grouted in with fresh hot lime, and the outer face supported by a wooden frame, which has been suffered to remain until it decayed. The large grooves left by the vertical and horizontal beams are distinctly visible. In one of these horizontal grooves a terra-cotta water pipe has been introduced at a long subsequent period after the wood had decayed. This pipe appears to have carried water to the reservoir for rain water, made in a cave behind the tufa wall, called the wall of Romulus. The date of this early concrete wall is not recorded; the earliest dated building of this construction is the Emporium on the bank of the Tiber, about two centuries before the Christian era.

The celebrated wall called the "Muro torto" (because it is distorted by the giving way of the foundations) is an enormous mass of concrete, faced with net-work or *reticulated* work of early character, and with the angles formed of the small blocks of tufa, before described as looking like large bricks of a grey colour. This wall there is reason to assign to the time of Sylla, or about a century before the Christian era. The fine tomb of Cecilia Metella belongs to about the same period. She was the wife of the rich Crassus, who was the first to use marble columns in a private house in Rome. Her tomb is faced with stone, an early example of the use of travertine; it is lined with brick, but the mass of the immense walls is of concrete. Those walls are about thirty feet thick, leaving only a comparatively small round opening in the centre for the sarcophagus.

The Pantheon of Agrippa, built a few years before the Christian era, has also walls of enormous thickness, the mass of which is concrete, faced with brick, and the brick is bound together and fixed to the concrete mass by a number of arches of construction.

The buildings of the time of Julius Cæsar are generally faced with large blocks of travertine, well cut and well fitted together, but quite plain. There is a fine example of this period, or early in the reign of Augustus, in the "Vicolo del Ghettarello," at the foot of the Capitol, which we have ascertained to be a part of the great Mamertine Prison rebuilt at that period. The upper part, above ground, is the only part rebuilt; the lower part, in the cellars underground, still consists of the walls of the time of the kings, built of large blocks of tufa.

The buildings of the time of Augustus continued to be still frequently quite plain, during the early part of his reign—that is before the Christian era. The Arch of Dolabella, which is dated by an inscription upon it, A.D. 10, is of large blocks of travertine, well cut and thoroughly well built, but quite plain. The great high wall that encloses the eastern side of the Forum of the Cæsars, called of Augustus, is

also very plain, and is more an adaptation of that part of the great wall of the city in the time of the kings, altered in the time of Augustus, than an actual new building. The arch, or gate, called the *Arco di Pantano*, is of *travertine*, inserted in a massive wall of *tufa*. The wall which separates the Forum of the Cæsars from the Forum Transitorium of Nerva is of *travertine*, inserted in the lower part of the high wall of *tufa* before mentioned. This is now behind the houses opposite to the remains of the Temple of Pallas, and near the "Torre de' Conti," which is built upon part of a great wall of tufa, at one of the angles. The cornices of this wall of *travertine*, and of other walls of the time of Augustine, in the early part of his long reign, consist of a plain square band projecting from the face of the wall, as simple as possible.

During the long and peaceful reign of Augustus great progress was made in the fine arts, including architecture and the construction of walls. According to some authorities, the time that Christ was on earth was precisely the period when the arts were in the highest state of perfection in the Roman Empire. This view is hardly borne out in strictness by existing remains, but it universally agreed that, during the first century of the Christian era, the arts were on a higher state of perfection than they had ever been before, or have ever been since (unless, perhaps, an exception is made for architecture in the thirteenth century—but that does not apply to Rome). Architecture is generally a guide to the other arts.

For the construction of walls, the brickwork of the time of Nero is the finest in the world. The bricks with which the walls are faced are so thin that we can count ten to the foot, including the mortar. This perfection did not continue long. In the second century there are eight to the foot, in the third century six, and in the fourth century, four only, as in modern brick walls. This is a useful general guide to the age of a building in Rome, because the walls frequently remain when all the ornament has been destroyed. The Roman temples of the first century were better than at any other period, but their marble temples were never equal to those of Greece, and some of the largest and finest buildings in Rome, belong to the second and third centuries, although their details do not equal, in purity, those of the first. The magnificent thermæ of the Antonines, called after Caracalla, are not equal in the construction of the walls, or in the architectural details, to the thermæ of Titus and the House of Nero; but there can hardly be said to be any perceptible falling off in the buildings of the time of Trajan and Hadrian. Many of the temples were rebuilt by Septimius Severus in the beginning of the third century, and their old names retained, as we are expressly told by the historian of his life, and this is a point always to be considered in examining the Roman temples.

Of the temples and other buildings before the time of Augustus we have, in general, only such remains as serve for historical purposes, but not as models. The buildings of the time of Augustus that remain sufficiently perfect to be considered as models, are the Theatre of Marcellus, the Temple of Fortune, near the Tiber, and the Arch of Drusus. The remains, in an imperfect state, are numerous and important, and some of the bridges are nearly perfect.

Of the second half of the first century we have the Arch of Titus; the early part of the Colosseum; the House of Nero, or, at least, several chambers of it; the Temple of Vespasian and Titus in the Forum.

Of the second century the remains are numerous. A large part of the Colosseum is of this period; the remains of the thermæ of Trajan and his celebrated column; the portico of the Pantheon; the Column of Antoninus Pius; the Temples of Marcus Antoninus, and of Antoninus and Faustina.

To the third century belong some of the grandest and most celebrated of the existing remains. The great thermæ before mentioned; the Arches of Septimius Severus; the portico of Octavia, as restored; the great wall of Aurelian, of which many parts remain nearly perfect.

The beginning of the fourth century, the time of Maxentius, was a great building era, and we have

many buildings of that period remaining; but after the accession of Constantine, the Senate ordered that all these buildings should be called after his name, and the name of Maxentius obliterated. To this period belong the great Basilica, or Market Hall, near the Palatine, called the Basilica of Constantine; the round Temple of Romulus, the son of Maxentius, at the foot of the Clivus Sacer, now part of the Church of SS. Cosmas and Damian; the Circus of Maxentius, on the Via Appia, and the round Tomb of Romulus near to it.

The removal of the seat of Empire by Constantine was fatal to the prosperity of Rome as an Imperial City. He also gave all the Imperial estates in the Campagna to the Church, as endowments for the chapters then formed, and as those estates had supplied the funds for the buildings of the city of Rome, this transfer completed its ruin. After that time, the history of Church Architecture, and of the Middle Ages, begins.

The construction of the walls of the Circus of Maxentius and the other buildings of that period is very bad, and shews how much the fine arts had declined at that period. We have the same construction in the interior of the gateway towers of Honorius, built about the year 400; it occurs, also, in foundations at a much earlier period; it is a cheap and strong construction, consisting of layers of small stones grouted in, and alternate layers of bonding tiles. But the circus of Maxentius and Romulus is the first instance in which it is used in towers and terraces intended to be seen. This circus was formerly called of Caracalla, but erroneously, as shewn by an inscription found there some years since. The same construction is usual in England in Roman walls of the time of Constantine.

It would be absurd for me in this place, and in a general sketch of this kind, to introduce any details about the difference between the Grecian and the Roman *orders*, as they are called, which apply only to the columns and entablatures—these are to be found in any school-book on architecture. I wish only to remark, what appears to me evident, that these Roman deviations were not developed until the third century, the earlier buildings are more pure.

It may be useful to remind you of the durability of Roman walls, and the cause of it. The early walls, as I have said, were merely masses of stone, put together without cement, and of course such walls, if let alone, are everlasting. After the introduction of lime mortar, their walls are equally durable, but from another cause—the lime was always used quite fresh and hot; it was pounded and mixed with a large proportion of gritty sand: full advantage was thus taken of the wonderful expansion and crystallization of lime as it cools The jagged edges of the crystals combine with the rough sand, or broken stone, or brick reduced to powder, and the mass thus formed is as hard and as durable as a natural concrete rock. English builders frequently have a prejudice against the use of lime quite fresh and hot—they say it bursts the walls, but this is because they do not pound it, or grind it, before they use it. A large lump of lime, when water is poured upon it, will burst through anything, but in a powdered state there is no danger of this. The principle of our modern cements, both that called Roman cement and that called Portland cement is the same—they consist of fresh lime pounded and mixed with rough sand or pounded stone, and *kept in air-tight vessels* until it is used. If this precaution is not attended to, lime absorbes moisture from the atmosphere so rapidly that all its binding power is gone before it is used. The more fresh it is, the more strongly it will bind.

After this period in Rome the churches are for the most part mere imitations of the old Basilicæ in which the early Christians had been permitted to assemble for worship, and the old materials are used again. In the fifth century, however, there are some exceptions to this. The church of SS. John and Paul and the Prætorium, or soldiers' church, of S. Stefano Rotondo are of good construction; this round building is of Byzantine character very much like S. Vitale at Ravenna originally, but altered afterwards, when it was made into a church. This is the last building in Rome that can be con-

sidered as of classical character, after that we have the mediæval buildings, which belong to another branch of the subject.

A few words on the construction of mediæval buildings in Rome may be interesting. It is rather difficult to say when the Middle Ages begin. In the west of Europe we generally mean by that term, from the eleventh to the sixteenth century, but in Rome it is usual to begin them at a more early period, and to include what some call the "Period of the Decadence," that is, from the fourth century to the tenth. For that long space of time, about six hundred years, we have scarcely any buildings remaining in England, and very few in France or Germany, because it was the habit of the people to live in wooden houses, and to make even the churches and public buildings of wood also. The Anglo-Saxon word for "to build" is "*timberen*," and in Normandy M. de Caumont sought in vain for any masonry on the sites of the castles of the Barons who came over to England with William the Conqueror. He found very fine earthworks, but no traces of stone building of that period. The Norman keep was invented by Gundulph at Malling, and rapidly adopted by the king, in the White Tower of London, and by the Norman Barons generally, as so admirably adapted to their wants at that period. A handful of brave men could defend themselves in one of these keeps against any number until succour could be obtained from the neighbouring barons.

In Rome, the fortifications are much earlier, and of quite a different type. The gateway fortresses of Honorius, built about the year 400, are an entirely different thing from a Norman keep. Each is a circular wall surrounding the old gate, with inner and outer gates, so that when one of the gateway fortresses is perfect, as at S. Lorenzo, you pass through three gates. The substructure of the flanking towers can be seen from within, as is shewn in some of my photographs; it is very similar to that in the Circus of Maxentius and Romulus before described, massive concrete walls, with layers of bonding tiles, faced on the exterior with the usual Roman brick-work, called "Opus Lateritium."

Some of these gateway fortresses were rebuilt by King Theodoric about the year 500. The most perfect of them is, perhaps, S. Sebastiano, the lower part of which is cased with marble blocks, taken from the ruins of a temple; the upper part of the tower is of brick, in a semicircular form, very similar to the belfry towers at Ravenna. But in all these cases, the mass of the wall is generally concrete. The brick facing is quite distinct from that of the magnificent wall of Aurelian in the third century. This wall, of which there are large remains, was one of the wonders of the world. It was thirteen miles long, fifty feet high, and had a corridor for the sentinels inside the wall, with an open arcade within and the solid wall without. The churches of the fifth century have been mentioned, Some of the classical buildings were restored also at that time, as we know by inscriptions preserved, but in a very inferior manner to the original construction. All the early churches had been halls in houses, and retain that form, which came to be considered the natural form of a church, and the name of Basilica, which originally signified the King's Hall, was adopted as that of a church.

That of the Holy Cross at Jerusalem is a curious instance of the adaptation of an old hall for a church. The main structure is of the second century, and is oblong, with the original arches for aisles. At the altar end of this, an apse has been added in the time of Constantine, when it was made into a church by his mother, S. Helena, who resided in the Sessorian Palace, of which this had been one of the halls. This shews that the idea of an apse had at that time come to be considered as necessary to make it a church, but in the fifth century round and polygonal churches were sometimes built, as at Ravenna and S. Stephen's before mentioned.

The great abundance of building material, including marble columns by the hundred, which remained in Rome from the time of the Empire, was in reality a misfortune to the Roman architects. To make use of these materials they continued to build in the old forms, not only during the period

before the year 1000, but in the thirteenth and fourteenth centuries also, long after the magnificent English style, miscalled Gothic, had been brought into general use in the west. The porch of S. George in Valabro, of the middle of the thirteenth century, is a classical colonnade. The so-called Gothic style scarcely came into use in Italy until the fifteenth and sixteenth centuries. In general, the exterior of a church is not intended to be seen excepting the façade, which is usually a *sham*, a mere wall built up for effect, probably twice the height of the actual roof. On the other hand, the effect of the interior of a church of the Basilica type is very fine, the classical columns, though often of two or three different kinds, have a good general effect, and the mosaic pictures in the apse are constant objects of admiration. The columns down the two sides sometimes have only a horizontal entablature, often built of old fragments. Sometimes there are small brick arches behind this, and concealed by it; afterwards the arches are boldly shewn. The arch is the real characteristic of Roman architecture, and from this everything else has been developed. Some authorities say that the arch was used by the Etruscans, and taken from them by the Romans, and this is probable, but, in some instances, the arch of the gate of an Etruscan city is Roman on Etruscan jambs, as at Cortona, which is often cited as an early Etruscan arch.

In mediæval walls in Rome, the surface is often faced with small stones of a peculiar character, called "Opus Saracinisca," said to have been introduced into Italy by the Saracens, but it is really found occasionally in early Roman work, and was, probably, taken by the Saracens from Byzantium, and only brought back into Italy by them.

Not to weary you with further details, I will merely mention that, in the sixteenth century, the brick walls of San Gallo are so admirably imitated from those of Aurelian, that it is difficult at first sight, to distinguish the one from the other. Generally, perhaps, the buildings of the Renaissance in Rome are the finest that we have anywhere. They had admirable models before their eyes, and the people have never been willing to give up the glorious style of the Empire, to the memory of which they always cling with fond delight.

At the conclusion of Mr. Parker's Paper, the Chairman having invited discussion,

Mr. BURGES, Fellow, enquired what progress had been made in respect of the excavation of the ancient marble plan of Rome, and whether anything further remained to be done with regard to it.

Mr. PARKER replied, that several new pieces of that plan had been found, but that more remained to be found. The circumstances were these—the plan in question was made in slabs of marble, which now hung upon bronze hooks against a brick wall, at the back of the Templum, Urbis Romæ? now the Church of SS. Cosmas and Domian. All the lines were as sharp as when they were first cut. A very large mass of materials, forming a corner of the great Basilica of Constantine, was thrown down, it was believed by an earthquake, and fell on the pavement in front of the wall to which the marble plan was attached. The violence of the concussion broke the bronze hooks by which the slabs of the plan were suspended. The wall itself remained still a very strong mass of concrete, with portions of the hooks still remaining in it. The marble plan originally hung against this wall, which was faced with brick to receive it. The plan was not executed on the same scale throughout. Those portions which were at the top of the wall, and at a distance from the ground, were done in a rough way, so as to be seen from that distance; while the lower portions, nearer to the eye, were on a smaller scale and more finely executed. He contemplated making further excavations at that spot, and expected to meet with further portions of the plan. About two years ago the monks set to work digging there, but they found it expensive, and gave it up for want of funds. They advertised for funds, but the time was unfavourable for foreign visitors in Rome. He had obtained permission to re-open that pit, and contemplated doing so on his return to Rome.

Mr. BURGES enquired whether any fragments of the plan, beyond the well-known ones in the Capitoline Museum, had been discovered?

Mr. PARKER replied in the affirmative. They were found two years ago, and he had photographs of them.

Professor DONALDSON remarked, that portions of the pavement of the church referred to as having fallen against this wall, had been placed in the Capitol Museum.

Mr. PARKER added, that contemporary accounts stated that they were found in the same place, at the foot of this wall. Other portions were buried.

Sir M. DIGBY WYATT, Fellow, enquired, how large a portion of the plan had been excavated?

Mr. PARKER replied, it was impossible to say, the whole was so broken up. He intended to open the pit as a venture, and he hoped to find the other portions. Mr. Parker then called attention to a small painting of the Madonna, which he discovered in a small chapel of the sixth century, made in the corridor of the wall of Rome. It was one of the earliest representations of the Madonna he had met with. He discovered it whilst examining the wall of Aurelian. It certainly was not Mediæval. Those who had studied the subject pronounced it to be a sixth century work, but he could not vouch for it himself.

Professor DONALDSON, on the subject of the first invention of lime mortar, remarked, that it would be found in the records of the Institute, that when he made his first journey to Egypt he brought home with him a large fragment of mortar, which he extracted from one of the pyramids. It was manifest that such a heterogeneous mass of stone as that, which formed the internal construction of the pyramids, could not have been put together without mortar to hold them, or to fill up the vacancies in the great mass. The inner chambers were lined with wrought stones, and presented a fair surface, and there was granite upon the face of the pyramids, but the centre mass of those structures was composed of very rough blocks indeed, the stone having been brought from the Mocattam range, on the other side of the Nile, and they could not have been put together, and the vacancies filled up, without mortar.

Mr. PARKER said he had never been in the east, and no drawing would distinguish whether there was mortar between the stones or not. Such photographs as he had seen represented no mortar. He believed it was the same in regard to the Palestine explorations. Intelligent travellers in the east had told him they did not remember having met with lime mortar earlier than the time of the Roman invasion. They certainly did not find it in the earliest walls of Rome, and he believed it was not found in the Greek temples.

Sir M. DIGBY WYATT corroborated the views of Professor Donaldson. Many of the earliest Egyptian monuments were laid over with a thin coating of cement, so that the hieroglyphics could be made upon them: and having been used in that period as a decorative element, it was most likely to have been used as a constructive element as well.

Professor DONALDSON said, his own experience, when he examined the walls of Rome of different constructions, was that the tufa walls were certainly filled in with mortar. He drew a line between the old constructions and the new constructions; but he found, and it was a curious fact, that the joints of the front faces were brought close together, while the inside of the joints were filled in with mortar.

Sir M. DIGBY WYATT remarked, that in his examination of the Cloaca Maxima he failed to discover any mortar.

Mr. PARKER observed, that the wall of the Latins, on the Aventine, was cited as a case where lime mortar was used, but the fact was, it was modern mortar, and inserted at the time it was excavated in order to make the work look neat. The mortar was quite white, unlike the old mortar. Some portions of the Palatine work looked doubtful in that way, but he had understood to make them look neat they had been pointed with mortar an inch or two deep.

Professor DONALDSON. The outer joints closed, and the interior open, filled in with mortar.

Sir M. DIGBY WYATT remarked that the walls he had seen did not bear out the Professor's observations. Where they were finely worked in rectangular blocks, particularly in tufa, they did not, where the blocks were large, use mortar. Where the blocks were small, they did use mortar at an early period. In large blocks, when squared, they did not require it; where they were small, they did. He did not regard the non-use of mortar as an evidence of antiquity; but when squared stones were used without mortar that was an evidence of early construction.

Mr. PARKER would be glad to learn at what date lime mortar was first used. He could not trace it to an earlier period than three centuries before the Christian era.

Sir M. DIGBY WYATT added that the Indian and Egyptian monuments would show a much earlier use of mortar than that, both constructively and ornamentally.

Mr. PARKER, on the question of the thickness of the mortar joints being an indication of the age of a building, remarked that all early work had thick joints, and it was not till the twelfth century they got fine joints. It often happened that in long and short work at the angles it was joined as close as possible. Usually it is a distinction of twelfth century work. In the castle of Sherborne, William of Malmesbury notices that the joints were so close that it looked like one stone.

Professor KERR hoped that Mr. Parker, whose antiquarian accuracy was much relied upon, would reconsider the apparently secondary question of the early use of lime mortar. He felt sure it would be discovered that the opinions which Mr. Parker had advanced were not merely hasty conclusions as to matter of fact, but such as to undermine received opinions upon the very groundwork of structural art. The condition of stonework cemented together was theoretically most essential to one's impressions of primitive architecture. As regarded the question of fact, there seemed to be no doubt that the Mosaic record described with perfect clearness various circumstances, sometimes directly, and sometimes indirectly, which were indeed conclusive, and of complete historical intelligibility. The Tower of Babel, for example, was built of burnt bricks and bitumen: "To them," said the record (in corrected translation) "a brick was as (or for) a stone, and bitumen for clay," (in our Bibles "and slime had they for mortar"). No doubt, in the common building operations of the period, unburnt bricks (such as the Israelites made in Egypt) were cemented together with tempered clay. As to the distinction drawn by Mr. Parker between "slime" and bitumen, he would be able readily to satisfy himself, by the allusions, for instance, to the valley of the battle of the kings being "full of slime pits," and by the obvious connection between the circumstances of the destruction of Sodom and Gomorrah, and the prevalence of such bituminous deposits, that slime is the mere translational term for bitumen, expressly meant to be understood in the original. Herodotus also described, quite distinctly, the use of bitumen in the great wall of Babylon, with reed-mats for bond. In short, the use of a cement of some sort had been a principle from the very commencement of building—first, clay; then bitumen; lastly, lime: and the last by no means late in primitive history.

Sir M. DIGBY WYATT again rose, and said the moment had now arrived when he believed he might ask the permission of the Chairman to be allowed to propose a vote of thanks to Mr. Parker for his admirable paper. It was gratifying to find that the same energy which had led that gentleman to investigate the remains of the mediæval ages in this country left him with equal energy and still greater ability, tempered by previous study and matured by experience, to enter upon the study of the remains of perhaps the most interesting site in the world—Rome. They could not but feel, whilst Mr. Parker carried them over the ancient fortified defences of that city, how great a parallel it found in this country in the enormous earthworks that were carried along our great downs from one district to another; how much parallel they found with those early times of civilization which marked the foundation of Rome

by Romulus. The exploration of the remains of ancient Rome, they all knew, had hitherto been a matter of great difficulty. In the Etruscan and other towers surrounding the Campagna of Rome they found an organised system of defence. In Rome itself they had found scarcely any remains whatever, except the Cloaca Maxima, and a few of the leading walls. Now they had laid before them, and fairly traced, a system of circumvallation and lines of defence showing the strong points of the city which presented a fair system of strategical resistance; and it was curious to find that in those early cases of laying out fortifications the site enclosed appeared greater than one imagined the population of the city required. That was interesting, because it showed that many of those cities were like those mentioned in the Bible, cities of refuge. While in times of peace, the herdsmen and proprietors of flocks were able to cultivate the soil and gather in their crops; in times of danger the impulse was to man the outworks of the country, and then retire into the inner fortified places, driving their flocks before them; so that this great wall afforded accommodation and protection, not only for the ordinary inhabitants, but for all comers who sought protection there. It was in this way they could account for the fortifications when the hand of every tribe was against another tribe. In tracing these same kinds of defences in Rome (which appeared hitherto without defence), and on a still larger scale in the earlier cities of Italy, they must remember they were speaking of the nursery of civilization—the centre and heart from which the arteries of all intelligence had throbbed till the present day. He said from the way in which this subject had been placed before them this evening—a subject full of materials for thought and study, though necessarily not amplified to the extent which its interest deserved—for the information which Mr. Parker had given them, he felt that they owed that gentleman a great debt of gratitude.

Professor KERR begged to second the resolution of thanks, and he did so rather on personal than antiquarian grounds, for it was most gratifying to see a man of Mr. Parker's position, after passing a well-spent life, devoting a new life, as it were, to antiquarian researches in so interesting a locality as Rome. They would all congratulate Mr. Parker, and wish him even greater success in his future exertions in this direction.

The motion was carried with cordial unanimity.

Professor DONALDSON directed the attention of the meeting to an instrument called the *Téléiconographe*, which had been presented to the Institute by its inventor M. Henri Revoil, Honorary and Corresponding Member, and which was described as a modification of Dr. Woollaston's camera lucida. By means of a prism placed at the end of the telescope, the details of buildings, etc., at long distances could be traced on paper with the greatest accuracy on a scale of magnitude never before attained. M. Revoil having generously presented the Institute with one of these instruments, accompanied by numerous drawings which had been made by its aid, the Council had caused it to be properly mounted on a stand, and it would be placed in the Library, where members would have the opportunity of examining it. On the motion of Professor Donaldson, a special vote of thanks was passed to M. Revoil for his donation.

The CHAIRMAN said before the meeting separated, he would mention another instance in which their thanks were due. It was the presentation of a bust of the late Mr. P. F. Robinson, a former Vice-President of the Institute, and one of its most active members. He was sure the meeting would wish to give their thanks to Mr. George Robinson for the present of the bust of his late father.

The thanks were unanimously accorded.

The following Paper was then read:—

DESCRIPTION OF THE APOMECOMETER, FOR MEASURING INACCESSIBLE HEIGHTS AND DISTANCES.

By Richard C. Millar, A. R. I. B. A.

I have much pleasure in appearing before you this evening, for the purpose of bringing under the notice of the Institute a small optical instrument which I have invented for measuring heights and distances. Unlike the generality of such instruments, its construction is simple, and little or no calculation required in ascertaining any measurement by its means. By its aid almost any height connected with a building can, with accuracy, be obtained, as well as the horizontal distances between inaccessible objects. This may appear a good deal to claim for such a small instrument, but I hope to be able to show you that such is the case. The idea first occurred to me while using a box sextant, that by setting the glasses to an angle of 45 deg., and moving backwards or forwards from the object, a point could be fixed, from which the distance to the perpendicular should equal the height without the use of trigonometry, or, in fact, any calculation whatever. I made one of ebony to take with me on a sketching tour through France and Italy, where I had many opportunities of testing its usefulness. After registering it, I got Stanley to construct them in their present shape, being more portable, as you may perceive, than the other.

The Apomecometer is constructed in accordance with the principles which govern the Sextant, viz.—As the angles of incidence and reflexion are always equal, the rays of an object, being thrown on the plane of one mirror, are from that reflected to the plane of another mirror, thereby making both extremes of the vertical height coincide exactly at the same point on the horizon glass; so that, by measuring the base line, we obtain a result equal to the altitude.

The instrument consists of two mirrors, A and B (fig. 1), fixed in a small box, at such an angle that, by the production of their planes till they meet, the angle A. D. B. would equal 22 deg. 30 min. And because the total deviation of a ray of light, after reflexion successively at each mirror, is double their inclination, the angle E.C.H. is equal to 45 deg.

In explanation of the manner of working with the instrument, H.E. represents the vertical height required; H.C. the horizontal line; A.E. the ray of light, or reflexion of the image at E, striking the mirror at A, and from that reflected to the glass at B; half of which is silvered, and formed into a mirror; so that, in looking through the aperture at L, the instrument being held in the hand in the same position as is shown, the point H. is seen by direct vision through the plain half, while the point E. is seen reflected in the mirror. These two points must be made to agree exactly—in fact, overlapping each other—in the glass at B. This is done by moving the instrument backwards or forwards along the horizontal line C.H.

DIAGRAM ILLUSTRATING
THE USE OF THE APOMECOMETER.

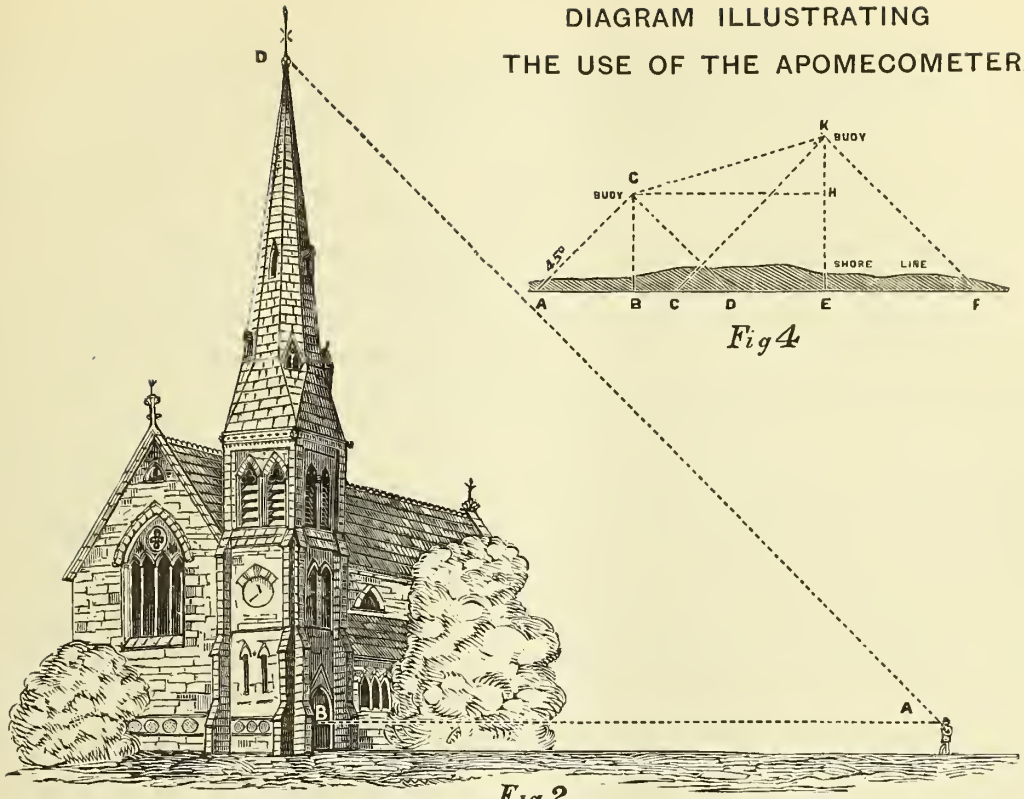


Fig 2

Fig 4

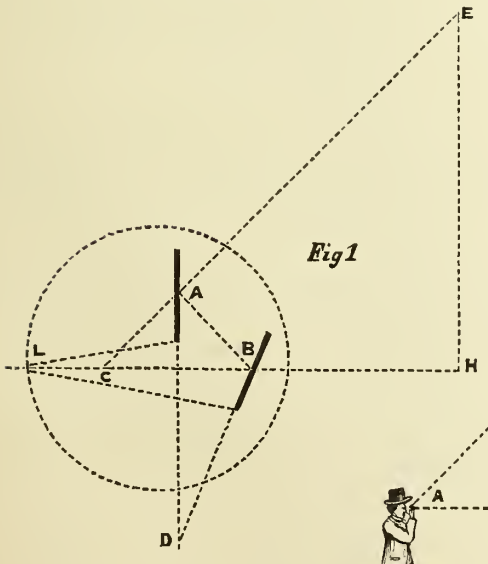


Fig 1

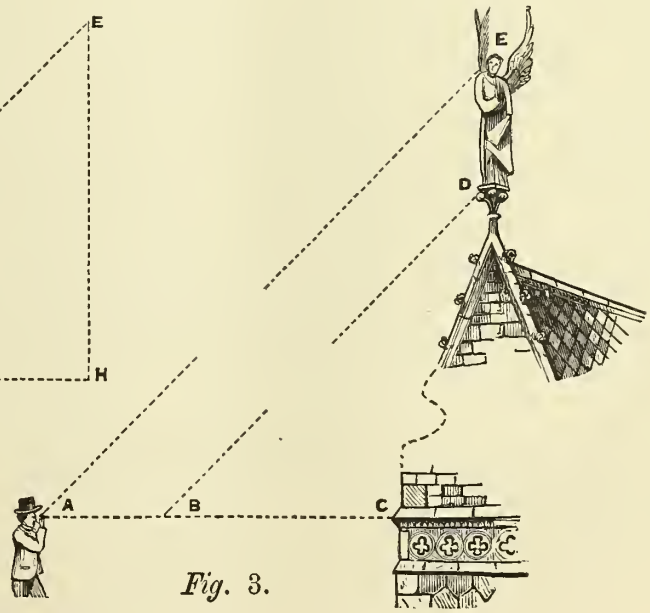


Fig. 3.

In order to illustrate the subject, suppose we wish to ascertain the height of the tower and spire (fig. 2). Walking up to about the point A, we assume some mark on a level with the eye,—say the handle of the door at B. Looking through the instrument, we move backwards or forwards, till the apex of the spire at D, seen by reflexion, coincides with the handle at B, seen by direct vision; this can be done in a moment, and with the greatest accuracy—even moving a few inches from the exact spot at A. will make a difference, and be at once detected. Then, the distance from the point A, at which we stand, to the centre of the tower, is equal to the perpendicular height from the handle of the door to the apex of the spire, to which the height of the handle from the ground can be added.

The whole accuracy of the working depends on assuming a mark at the proper level with the eye, and in a vertical line with the higher extremity of the height we are about to measure, and also measuring exactly to where a perpendicular, if let fall, would drop. A little practice will make this easy, and if done correctly, the result should come—even in a high building—to within an inch or two of the actual dimension; for so sensitive is the reflexion on the glasses, that the smallest divergence from the exact spot is capable of being perceived. If, for instance, in measuring the tower, the mark on the building be taken at a wrong level, the error will not be increased in any appreciable manner. As in the case of the spire, if the point B. be taken at three inches below the horizontal line, it would make the building four inches too high; however, in taking interior dimensions with a level floor, no such difficulty should be experienced. I do not wish to lead you to suppose that the Apomecometer is applicable in every case. There are a few isolated instances in which it will not act; as, when a building is erected on the summit of a steep hill, in such a manner that we cannot approach it, at some side or corner, in order to assume a point on a level with the eye. It is also necessary, in taking a height, to be able to recede from the perpendicular line to such a distance as to have a clear space equal to it. However, this condition would not prevent the height of a house in a narrow street being obtained, for we are not bound to stand opposite to the height measured, provided both points chosen are in a vertical line; consequently, the result might be ascertained from the path in front of the house.

The Apomecometer, from its construction, is adapted to another series of measurements; such as obtaining the heights of windows, statues on pediments, chimnies, &c. As, for instance, (fig. 3), the height of the statue is required; the first thing to be done is to get the point E, or head of the statue, to agree with some mark at the base of the building at C, on a level with A, leaving a mark there, and walking on till the point D, or foot of the statue, coincides with the mark at C, which it should do at B; then the distance from A. to B. is equal to the height of the statue.

Horizontal distances can be taken in a similar manner as heights are obtained, by using the instrument on its side. Fig. 4 represents two buoys out at sea, to which the distances from the shore are required, and also the distance they are apart. A base line is all that is necessary in order to take the observations. The angles at A.C.D. and F. are taken with the instrument by moving backwards or forwards along the base line A.F. Half A.D. equals A.B. or B.G., the distance of the buoy at G.; half C.F. equals E.F., or the distance of the other buoy from the base line. The distance H.K. equals E.K. minus B.G., therefore in the right angled triangle K.H.G. the sum of the squares of the sides, subtending the right angle, is equal to the square of the hypothenuse, or the distance G.K. between the buoys.

I have now, gentlemen, to thank you for your kindness in following me through this long explanation, and should you become better acquainted with the instrument, I trust it may prove both useful and valuable.

The Meeting then adjourned.

Royal Institute of British Architects.

At the Ordinary General Meeting, held on Monday, the 29th of November, 1869, Sir WILLIAM TITE, M.P., President, in the Chair, the following paper was read :—

ON SOME OF THE DIFFERENCES OF STYLE IN OLD BUILDINGS.

By G. E. Street, A.R.A., F.S.A., Fellow.

I must preface what I have to say to night by a few words of apology for an apparent change in the subject upon which I undertook to speak. This change was in truth involuntary. I thought to say somewhat upon the various opportunities of study which seem to me to lie open to us now-a-days, but when I came to look at them I found that I might do much better by confining myself to one of them, and that even then, the time would be all too short to say all that ought to be, and might be, said on the subject. I confine myself, therefore, to-night to bringing before you some considerations as to the causes which produced the differences of style observable in Mediæval buildings throughout Europe. The subject is one full of interest, and has the special advantage to me that it has, so far as I know, seldom if ever been properly discussed. Men have written and talked and lectured too much as though Gothic architecture could have its history concisely written in a few chapters on one country, and as though by the time a man had mastered his Rickman or his Violet-le-Duc he had covered the whole ground that was open to him. This ignorant mistake (I can call it nothing else) is likely to be, as it has hitherto been, calamitous in its consequences. Looking at its effect upon modern work, I think one may see that we run very great risk of getting too much into the same particular grooves. It is impossible to look at our new buildings without feeling only too often that they are the result, not of original study, but of thoughtless acquiescence in laws which have been laid down by common custom, or by the practice of some one popular man. Take for instance our ecclesiastical architecture, and what do we see? Our new church consists almost always of a building planned within very close limits as to variety. We have the eternal nave aisles and chancel without end or variety, and with as few evidences as possible of the personal feeling of the artist, whereas if we look carefully and largely at old buildings, we shall find that they show much greater variety than ours, and that their architects were much less hampered and restrained by self-imposed rules than we allow ourselves to be. No doubt it is always more easy to see what other men are doing and to follow their lead, than to study and think for one's self. And to-night in speaking especially to those who are my juniors—for to my seniors all that I can say is no doubt already well known—I wish to point out to them the extreme interest and pleasure which they may derive from the study of their art if they will but go into it patiently, thoroughly, and lovingly, and with a view to analyzing all the causes of its variety.

And I venture to assure you that such study is the only true road to real honour, or real reputation, or to that credit with your countrymen hereafter, which seems to me to be the one glorious difference between our art and most other pursuits now-a-days. To-night I can do no more than draw an outline on the canvas, which each of you will be able hereafter to fill in for himself. For, as I shall show you, it is the special glory of our national architecture that its developments are so many, so

various, and so true, that no one who has both zeal and brains can avoid having his enthusiasm awakened in the course of his study. Nor is it a slight matter for joy that in all his studies, and in all his work, he will find that he is dealing with men placed exactly as he is now, and that the more he knows of their means and the difficulties they overcame, the more he will see that they were precisely those which he has to meet, day by day, in his own work.

Now, the differences in style in old buildings are very great, and the result of various causes. It is to be observed, first of all, that though mediæval art is in one sense entirely harmonious in all parts of Europe, it is equally true that it is sub-divided endlessly by little distinctions of district, province, or country, which serve practically to create endless varieties of style and detail, all in progress at the same time. It has been very much the custom to assume that these local varieties indicate divergences of principle, so that it is not safe for one man to study more than one of them. This is simple nonsense—for it may much more truly be said that no one does understand Gothic art who has not studied that of more than one country; and it is most undoubtedly true that there is as much difference in the style of old buildings in the various counties, districts or provinces of one country, as there is between any one of these and some one variety of the work of another country.

The work of old architects owed not a little of its vigour to its variety. Each man who had any inspiration did the best he wot of, and of course produced his school of followers. But the fact that so many men did this, shows how infinite are the life and variety of which Gothic architecture is susceptible, always in strict obedience to the true principles upon which it was founded.

The causes of variety were numerous, and each one of them deserves a separate chapter in a treatise. Among them are such as these:—

(*a*) The requirements of material—which are obviously different in districts which allow of the use of only (1) stone, or (2) brick, or (3) timber.

(*b*) The influence exercized in certain districts by exceptionally gifted architects.

(*c*) The spread of art-knowledge by orders of men, such as (i). Freemasons; (ii). Religious Orders, whose habits gave them knowledge of countries other than those in which they were for the time working; and (iii). In the course of conquest or colonization of one country by another—and lastly (iv). The employment (not at all uncommon in the middle ages) of foreign architects.

(*d*) Attempts in one age to copy work done in a previous age.

You will see from this list how much more might be said than I shall have time to say to-night; so let me try to say a few words on each of the heads which I have enumerated.

The requirements of the most available material certainly played no small part in the history of architectural development. We must remember that of old an architect was almost compelled to use the material nearest to his hand; water conveyance was the only chance he had of importing the material of one district into another, and of this ample use was made. But of course the opportunities were rare. You all know that Caen stone was, to some extent, used here at a very early date. Portland stone was transported to Cornwall, as I remember telling you in this place when describing the Church of St. Michael Penkevel. Stone from the South of England was taken by water to the Humber and used at Hedon Church; stone from the Isle of Wight was brought to Winchester for the building of the Cathedral; marble from Carrara was brought to Genoa for the Churches, from the mountains it was carried down to Milan for the Cathedral, and from over the sea it was brought to Venice to veneer the native brick walls of the Palaces and Churches, whilst to a great part of England it was carried from Petworth and Purbeck. So (if it is not out of place here) goes the old tradition about the glorious Tower of Probus. To account for its possession by so poor a place, it is said that it was ordered in

foreign parts, put all aboard of a ship, and—fortunately for Probus—brought by unskilful mariners there instead of to Truro, for whose Church it was intended. But in spite of such cases as these, as a rule it is true that every architect wrought in the material which was nearest to hand, and in so doing dignified his art by proving that no material which God had provided was unworthy of it. Honest, however, as the artist may be, there can be no doubt that the possession of a good material is of vast importance to the architect, and consequently that we, who enjoy such unbounded power of carriage and importation of fit material, must be judged in our work by a far higher standard than that which can fairly be applied to many of our forerunners. I have often felt, and I doubt not my experience is that of most of you, the strength in design which the power of using freely a good building stone gives. I declare that when I am using a good stone, in the neighbourhood of the quarry, where there is no extravagance in being choice in one's mode of using it, there is a sense of freedom and power, a feeling of life in the knowledge that one's work will last for centuries, which enables me to design with a degree of happiness and delight in my work which in other cases is almost wholly absent.

So it was in the Middle Ages. A good stone country produced good masons; they produced from time to time excellent master masons; the country about them became proud of their work and gave them plenty to do, and so from age to age they produced a succession of buildings all worthy of our admiration. How should we have had Wells and Glastonbury without the quarries at Doulting, or Peterborough without the quarries at Barnark, or Lincoln without those at Haydor, or York and the Yorkshire Abbeys without similar magnificent supplies of building stone near at hand. It was difficult to build badly with plenty of good stone to build with. The dignity of the material was a safeguard against utter badness of workmanship. And so the best art in England and elsewhere is found nearest to the best stone quarries.

But at the same time it is very much to my point that wherever such quarries did not exist, or wherever stone could not be procured in the neighbourhood, there the artists did their best at once to make the most of the other materials which were available.

Throughout Europe the early architecture was the work of stonemasons, and the carpenter and the bricklayer were but little esteemed. But when in the middle ages other materials had to be used, there arose the first opening for a difference of style caused by a change of material. Take the case of a granite country—go to Guernsey for instance, where granite was plentiful, and where there was no timber to be had, and you find buildings expressly contrived to meet this state of things. The churches are long narrow buildings; very rude in style, of course, because the granite was intractable; covered with arched roofs of rough granite carrying the outer roofing without the aid of any timber; the walls of necessity very thick in order to support the weight of the roof; and the windows, doors and arches plain and rude, because polish and finish in such a material was almost impossible. With all their rudeness, however, these Guernsey churches are full of interest and character. Allied to them in construction are some far-away churches built under similar conditions. Such I believe are to be found in Wales, and one of the most interesting description has come under my notice at Bolton, in Cumberland, where the same system of an arched roof resting on thick walls and carrying the external roof is also seen. St. Cormack's Chapel, on the Rock of Cashel, is an Irish example of the same sort; and on the Continent the examples are very numerous of churches into whose construction no timber found its way. Take for instance the churches of Auvergne or Perigord. Here we see an attempt made to construct buildings which should be as imperishable as the material of which they were built would allow. And whether (as is probable) because no timber was to be had in those bare volcanic districts, or whether solely on principle, the attempt was made to use stone alone. Perhaps those early builders saw what we don't usually seem to believe, that the use of one material alone is the surest way to building for

posterity. Building with stone and timber at once imparts great convenience, but at the same time, the certainty of decay at some day; whilst building in metal and stone, which we nineteenth-century men pride ourselves so much upon accomplishing, involves the certainty of almost immediate decay. That these French buildings were nearly imperishable is proved by their perfect state of repair even now. They were first of all covered with stone domes or vaults, and then these were covered externally with large slabs of stone. The consequent effect upon the design of the buildings may easily be seen. Their construction involved enormous walls to support the weight of the central vaults, and of semi-barrel roofs in the aisles—forming continuous flying buttresses—to support the central vaults: and so we have in this class of churches buildings entirely different in most respects from those which were built in our own country at the same time.

Then again, to take another material, observe how very much the use of flint in various parts of this kingdom affected the style of design. In flint districts stone was scarce, and builders, who had to import their stone from the quarries at Caen or from some far-off part of their own country, were obviously likely to be very economical in its use. One possible economy was the erection of buildings with as few quoins as possible. Hence we find among the Norfolk churches several in which the towers are circular in plan, and in which accordingly the cut stone is reduced to a minimum. At Welford, in Berkshire, is a similar tower, and so built for the same reason. Again, the use of flint, when it had arrived at the perfection which we see in the fourteenth and fifteenth century work of the Eastern Counties, led to the inlaying of stone with flint in a way which is certainly not only most skilful, but also most effective. Such examples as the Erpingham and Palace Gates at Norwich are evidences, among many others, of an important development of design owing wholly to the use of a particular material.

Another development with flint was the arrangement of the wall face in a diaper, formed of regular squares of stone and flint. This is a mode of work not often seen in the Eastern Counties, but common in Hampshire, Dorsetshire and Wiltshire.

The old builders seem often to have doubted the stability of flint walls; and accordingly I have found that whereas the old mortar is by no means too good in stone countries, it is often most admirable in flint districts. I believe it was used hot, and that the flint-work so laid will last for ever. In the steeple of the ruined Church at Garboldisham, the parish authorities have tested the old work by trying to remove the tower in order to find materials for road-making. But when they had blasted away the whole of one angle near the ground they desisted in despair, and the tower, still standing unaffected by the removal of a fourth of its base, is pretty good evidence of one effect of building with flints, where the builders were determined to do their work honestly and soundly, and to use good mortar.

Again, I suppose you are all aware how much the use of brick has affected the art of design wherever it has been adopted. Nothing in the whole history of our art is more curious. And for this reason. The architecture upon which almost all northern art was originally founded, was, as I said just now, the work of stonemasons. But as new ground was covered by architects they came constantly to districts, abounding with good brick earth, but almost destitute of stone. And they found themselves, therefore, under the necessity of making the most they could of the only really available material. But the various schools of architects who had to deal with this problem, were far separated from each other, had no natural or easy means of communication, and do not appear to have known much, if anything, of the brickwork which was being done elsewhere.

The great fields for brick architecture were (i). The North of Italy; (ii). The North-East of Germany; (iii). The West of France; and (iv). Various parts of Spain. There were other districts, but these were the most important. The developments of each were different, but they all agreed in the discovery of certain properties in bricks. In the first place they all found that if brickwork is to be strong it

must be built with an enormous quantity of mortar, and so instead of specifying as enlightened nineteenth century architects do, that "no mortar joint is to be more than a quarter of an inch thick," I think if we could find a mediæval specification we should find it run in this form, "no mortar joint to be less than half an inch thick." Then next they observed that bricks might be moulded, and that if the earth used were well tempered and fine, any delicate pattern might be re-produced in a hard material, which would almost defy weather. In subsequent times we have seen it become the fashion to ignore this vulgar view of the question, and to regard brick as a material which ought to be so soft as to be cut and rubbed easily. Moulded bricks of course made easy a plentiful use of a mould when once it had been made. And there was consequently a temptation to use a pattern over again as often as possible. The result of this was that in most brick districts we see moulded brick traceries used and repeated all over a building, not because they were very beautiful or because they were required, but because they existed and therefore had to be used. Look at the cornices of the Italian Churches, with their endless repetitions of the same form of tracery and you will see what I mean; whilst in North Germany the traceries all over the transepts of St. Katherine, at Brandenburg, shew precisely the same kind of result. Still more curious is it that in Italy, in France, and in Germany, the use of brick led to the erection of sham fronts in front of the roof gables, the main or only use of which was to shew off the variety of moulded bricks. You will see a close affinity in cause and principle between such fronts (to take typical examples from each country) as those of the Town Hall, at Lübeck, the gables of the churches in and near Toulouse, and the transepts of Cremona Cathedral, whilst, nevertheless, each is entirely independent of the other in style, and evidently their architects knew nothing of each other's work. And here I am reminded of the curious effect of this brickwork upon stonework in the same districts, as *e. g.* in Venice, where one cannot look at such traceries as those of the Madonna dell' Orto, consisting of groups of quatrefoils cut out to fit an arch, and not growing naturally as our own English traceries grow, without seeing that the necessary repetitions of brick traceries had probably suggested them. So again in North Germany we see at Brunswick, Halberstadt, and in that district generally, a remarkable type of west front, consisting of a raised gable between two towers, the sole object of which seems to have been the exhibition of magnificent traceries both to the east and the west, which looks almost as if it had been suggested by the common exhibition of magnificent brick traceries in the churches not far off, as *e. g.* in the transepts of St. Katherine, at Brandenburg, though no doubt the Romanesque examples of the same arrangement would rather militate against this theory. In the South of France, in Toulouse and its neighbourhood, the use of brickwork led to almost exactly the same kind of developments, as one may see in the front of St. Tour, Toulouse, or that of Ville Nouvelle and Ville-franche, not far off, but the details of the work in all these districts are different, and yet in each the style has been affected by the material, and is quite unlike what it would have been if stone had been available for use.

Again: what a complete change was effected in architectural design where wood only was available for buildings! In this country, there were certain districts in which oak was wonderfully plentiful in the Middle Ages. Such were parts of Hampshire, Worcestershire, Montgomeryshire, Cheshire and Lancashire. But in all parts of the country wooden buildings were very common, and at the present day there still remain, I believe, a vastly larger number of mediæval domestic buildings of this material than of stone.

The material here, as before, influenced the system of design most decidedly. The wooden building, framed together, not only admitted, but required for protection from wet, those projections of one story over the other, and of the roof finished with a barge-board over the uppermost, which make all old wooden constructions so picturesque and beautiful in their outline. It is worthy of notice also

that where oak was very plentiful it led to important developments of design. Compare, for instance, the magnificent roofs of Worcestershire and Montgomeryshire with those of Essex or Kent. In the former enormous timbers were available, and so the great principals of the roofs were cut into bold arches and their spandrels pierced with foliated openings of varied design—whilst in the latter, where the timber seems to have been much smaller, the roofs are generally formed of tie beams and king posts, and with no large curved timbers whatever. An admirable example of one of these wooden churches came under my notice some time since at Hartley Wespall, near Basingstoke; and as it has lately undergone restoration at the hands of Mr. Gilbert Scott, junior, I hope that my reticence about it will be held to involve him in some day giving the Institute his notes upon its more interesting features. I will therefore only describe it so far as to say that it dated from the fourteenth century, and that the walls were formed of oak uprights grooved so as to hold securely a filling in of mud or cobwork, which thus formed a fairly weather-tight construction. The then Bishop of the diocese protested against any attempt, on my part, to reconstruct the chancel in the same material, "because it would not stand," yet here was a building five hundred years old still standing, and I doubt whether one out of fifty of the churches his Lordship has consecrated will last half the time.

I must not go more into detail on this part of the subject, but must hurry on to the next head under which I proposed to deal with it, viz., the influence exercized in certain districts by exceptionally gifted architects. This alone is a subject which might well occupy us for the whole evening. It is true that our first scientific writer upon English architecture—I mean, of course, that dear Rickman, to whom I owe an enthusiasm which he created in my boyhood, and which I hope never to lose—whose book is to the present day the best we have, did attempt indirectly to go into this subject by showing similarities between buildings of the same age. But since his time little has been attempted, and I shall to-night only say just enough to induce some of you, may be, to try to follow up the same sort of enquiry in districts with which you may happen to be familiar. Of course in the Middle Ages, just as now, there was great difference of style and great diversity of power in the works of various architects. Men were never all giants, and those wonderful freemasons of old had no more power of securing invariably good designs, than their humbler namesakes of the present day.

As a rule each man's work will be found in one district. Sometimes it is the cathedral which set an example to the diocese. Sometimes it is the hand of an architect brought specially for the work from a distance; but always, I am persuaded, a careful examination of various works will show, among many of them in each neighbourhood, such evidences of unity of design and similarity of system, especially in the accidents or tricks (so to speak) of design, as would enable us to classify them with the same sort of ease with which we are at this day able to detect the hand of all our better architects in their various works, or in the sister art of painting to detect the manner of some old painter in almost every picture that we see.

At the present day it is true that some architects manage to give us such strange and unaccountable differences of style in some of their works, that in their cases it would be a little difficult to generalize. But in the case of old architects there is, I think, less difficulty, for as far as I have been able to ascertain, it seems that then each architect was very much in the habit of repeating himself. One reason for this was, no doubt, that it was quite possible for him to be ignorant of other men's works, or other developments of art going on in his own neighbourhood, to a degree which is quite impossible now. We are now so much educated in what is being done everywhere else in the four quarters of the world, that our art has become thoroughly cosmopolitan, and so runs great risk of losing one of the greatest of the charms of all antient art—its individuality and local colouring. With so much only of preface to this part of the subject, let me now give you a few examples of groups of works done by the same artist. I shall take various cases and rather at random.

We will begin with Westminster Abbey, because it affords, as I believe, a very remarkable case of a Minster and a small parish church built by the same man. The parish church is that well-known example at Stone near Dartford. Here, as I think I proved in an account of Stone Church which is, I believe, in the library of the Institute, there are pretty conclusive evidences that the architect was the same as that of Westminster Abbey. The points of similarity are as follows:—(i). The arcades round the chancel of Stone and the chapels of Westminster are nearly identical both in the shape of their cusps, the character of their mouldings and sculpture, and the peculiarities of their detail. (ii). The tracery in the triforium of the eastern part of the nave of Westminster, is almost identical with that of a window which I discovered in the north wall of Stone Church. (iii). The sculpture of foliage in both churches is curiously similar. The enormous dog-teeth enrichments in the north transept triforium are repeated in the chancel arch at Stone; the roses round the north transept doors are repeated in the north door of Stone, and the cross in a quatrefoil over a doorway in the eastern cloister at Westminster is repeated in some quatrefoils which I discovered in the east wall of the nave at Stone. Finally the materials used in the two buildings are similar. No doubt these similarities in themselves are very convincing; but what is still stronger evidence to my mind of a common author for both works, is that both, dissimilar as they are in first appearance, are planned on the same system of proportion founded on the equilateral triangle.

In the 'Ecclesiologist' for 1850, there is printed a paper of mine in which I tried, and I think with success, to prove that the churches of Merstham, Chipstead, Cliffe-at-Hoo, Brasted and Merton were all built by the same architect. The evidences of similar origin were generally small similarities of detail, and it is in these that you will usually detect the same man's hand of old just as at the present day. Another curious case is that of Bristol Cathedral and Yatton Church. Here the columns between the Bristol choir and its aisles are lofty, and carry very acutely pointed arches, whilst those of Yatton Tower are low and altogether different in proportion. Yet the detail of the fine mouldings which form the clustered shafts at Bristol, is exactly reproduced at Yatton, being wrought from the same moulds. The south transept window at Yatton is similar in style to some at Bristol, and this serves to make me think that we may fairly credit the architect rather than the mere stonemason with the similar details of the piers.

Another group of churches on the south coast may also be given to the same hand in the thirteenth century. Anyone who knows Chichester Cathedral well would, I think, be convinced if he were to visit the Church of St. Thomas, Portsmouth, that its choir was certainly the work of the same architect. And if he went from thence to Wymering, he would, I think, soon perceive that the delicate little columns which divide the nave from the south aisle there, are derived from the delicate columns at Portsmouth. Hayling and Warblington Churches, in the neighbourhood of Wymering, have some evidences of being the work of the same man. At the same period the magnificent Garrison Chapel at Portsmouth was built, but this is much more similar to the work of Bishop de Lucy, at Winchester, than to the other buildings.

Wantage and Bampton Churches have nave arcades which are as exactly similar in detail, shape, &c., as two works can well be. They seem to have been worked from the same moulds. Heckington and Navenby and Hawton are three Midland Churches, all of which are by the same hand, as the sedilia and Easter sepulchres clearly prove.

Three churches in Derbyshire and Staffordshire—Norbury, Blithfield, and Checkley—have chancels of the fourteenth century, which are singularly alike in character; they are all fine works, full of good detail and well preserved. Their windows also retain a great deal of very fine contemporary glass; that in Blithfield and Checkley is of the most delicate kind, whilst that at Norbury is coarse and inferior.

It follows, that if, as I suppose, the chancels were designed by the same man, he did not design the glass, for it is clear that the coarse detail of the windows at Norbury could not have been drawn by the man who drew the detail of that in the other churches, or executed in the same workshop. Probably some of this glass was done by some firm who (as they do now) supplied church decorations everywhere; we have curious evidence of the existence of such firms in the case of the decorations of the Norfolk screens; you know how frequent, though perhaps few of you know how exquisitely beautiful, they are. It turns out on examination that the figures on these screens are sometimes painted on *paper*, and then pasted on the panels, that the same patterns and figures are repeated on different screens, and that the same designs for figures of saints are in some cases found upon the screen in one place, and the stained glass window of another church. This is a valuable sort of evidence, because it serves to show that customs of trade, which we are apt to suppose to be modern, are in truth old enough for any one. And it accounts in some degree for the excessive similarity of the detail of many kinds of old decoration. Who, for instance, can examine the splendid screens in the neighbourhood of Taunton without perceiving that they were for the most part executed in the same shop under some one man—the Rattee of his day—whose skill had made him famous. So again, in the case of the carved ribs and purlines of the Cornish roofs, the similarity of workmanship and detail is so great that it looks very much as if the workmen who executed them were all taught by the same master; and in the case of inferior workmen there is, I believe, some evidence that the iron grille of Queen Eleanor's tomb at Westminster, the hinges on the door of Leighton Buzzard Church, and the hinges on a thirteenth-century door in St. George's Chapel at Windsor were all executed by a smith of Leighton.

The value of this examination of buildings erected by the same men or under similar influence was well illustrated in the restoration of Merton College Chapel. The chancel of Trumpington Church near Cambridge is evidently the work of the same man who built the Choir of Merton, and, if I remember right, there is some connection between the College and that parish which makes this supposition very *vraisemblable*. Therefore, when Mr. Butterfield had to restore the Chapel of the College he was perfectly right to go to Trumpington, where the original roof still remains intact, to learn what the proper form of roof would be; and what may strike many as the peculiar roof of Merton Chapel is in truth a mere copy of the roof of Trumpington, and, therefore, justified by authority.

The influence of particular artists upon the style of entire districts was sometimes no doubt very great. Few counties exhibit this better than those in the West of England. Examine the churches of Cornwall, for instance, and you will find this most remarkable fact—that in the fourteenth century all the churches were cruciform in plan, with western towers and spires, whilst in the fifteenth century they were equally invariably planned with three parallel aisles, and with western steeples *without* spires. It is very difficult to account for such a marked change, and I confess myself quite unable in this case to do so. But of the fact there is no doubt. There is perhaps some clue to the style of the fourteenth-century churches in the evident similarity of their details throughout, which seems to suggest that they were erected by the same man or body of men. Also the influence so often exerted by the erection of a grand cathedral may have had its weight here; Exeter Cathedral is the kind of building which must have created great interest at the time of its erection, and the style of its window traceries is somewhat similar to that of the windows in the Cornish churches of the same age. The characteristics of these churches are so remarkable that I may as well enumerate them. They are, as I have already said, cruciform, and except in the case of large churches—without aisles. They have no chancel arches. Their piscinæ are constantly in the east walls; the founders' tombs are in the end walls of the transepts, and the window traceries are almost always formed with the same leading lines. Finally, the architects at this period used good building stone for their work, wrought it well, and would have nothing to do with

the hard intractable granite which was so plentiful everywhere around them. For some reason, in the fifteenth century all this was changed. The churches were universally planned in a different way—so much so that I doubt whether a single example can be adduced of a cruciform church in Cornwall in the fifteenth century; their material was always granite, not stone, and their workmanship was as rough and rude as in the preceding century it had been refined and delicate in character. The carpenters in these parts, it is true, at this period were skilful; their roofs were covered with rich conventional carvings of foliage, and their open seats and screens were as gorgeous as labour could render them. But, here again, as I said before, the similarity in all the details throughout the county is so great and exact as to lead naturally to the conclusion that one man or one body of men had an extraordinary influence on all the wood-work executed during the period. It is a subject, therefore, which suggests and justifies the most careful enquiry, because it seems just possible that here, owing to the geographical configuration of the county, we have a case in which it might be possible to prove the existince of a distinct order of Freemasons, by whom, in accordance with certain fixed rules, all the work in each period was executed, though at the same time it is clear that if Freemasons *were* employed they limited their travels to a very small district, and never carried their art out of their own county. The same thing may be seen to some extent in other parts of England. Take Norfolk, for instance, and you will find one example after another throughout the county of fourteenth century stone-work, in which a style of flowing tracery is adopted and brought to the greatest perfection, of which it would be hardly too much to say that examples are not to be seen out of that part of England. So again in the fifteenth century in this county there was an absolute passion for clerestories, crowded with windows—two to each bay—and roofed with hammer-beam roofs, whilst the aisles were also roofed with arched principal-trusses whose spandrels had delicate and varied open traceries. Here, too, spires were little esteemed, whilst in Northamptonshire and Lincolnshire he was wrongly thought (just as one would, no doubt, be nowadays) a very incompetent artist who did not erect one in every church! Go, again, into Sussex, and you will find in the thirteenth century an extremely beautiful and simple type of village church; it has the most delicate lancet windows, excellent though modest proportions, and that kind of singular delicacy in all its details which reminds one of the refinement and simplicity of such work as Simone Memmi's in the sister art of painting.

In truth it is hardly too much to say that every county in England had its own distinct variety of Gothic architecture. And these varieties, where they were not caused by the presence of a particular building material, were mainly due to the influence of particular architects in various ages. The genius of the architects of Lincoln Cathedral in the thirteenth and fourteenth centuries was directly reflected by the beautiful churches which studded the flats over which the minster so proudly looked from its hill of strength. The glories of York Minster and St. Mary's Abbey (now alas! all but destroyed), are equally reflected in a Fountains, a Rivaulx, a Whitby, a Kirkham, a Bridlington, and a Beverley—any one of them a treasure of which any kingdom might be proud, which here are found close to each other, and all of them designed in a style full of peculiarities of detail which prove their architects to have been local men, and not versed in the work of the same age in the South of England. Look again at the Somersetshire towers, and see how evidently they were the offspring of one mind; so again the much simpler Devonshire towers, with what Rickman calls their "Devonshire" pinnacles. In Warwickshire, in Staffordshire, in Derbyshire, in Cheshire, in Kent, in Wiltshire, in Oxfordshire (where Christ Church Cathedral set an example, followed at Witney, Bampton, Faringdon, Uffington, Wantage, and Lambourne) among others, the most distinct evidence of the influence of local artists on the buildings is conspicuous even to a superficial observer.

If we leave England we shall find the same evidence of work by the same hand generally in one

district, but sometimes far apart, in all directions. You all know what influence France exercized in England in the person of the great architect of Canterbury Cathedral, William of Sens, or Italy on North Germany, in the copying of San Vitale, Ravenna at Aachen. In the same way, when the vast Cathedral of Santiago de Compostella was to be founded, its architect seems beyond a doubt to have derived his inspiration from the Church of S. Sernin, Toulouse. I have drawn the plans of these two churches side by side to show how very similar they are; but the strongest evidence of the same hand is seen in the fact that the sections of the two churches are not only absolutely alike in construction, but also designed upon the same system of proportion of height to width. And it is curious that between Toulouse and Santiago, with the breadth of Spain between them, there is no church founded on the same plan, all the other churches of the same period having, in place of a regular chevet with surrounding chapels, a system of parallel apses on the east of the church, such as you see in the other group of Spanish plans which I exhibit. In those at Lérida, Tarragona, Tudela, and other similar examples at Benavente, Salamanca, and throughout the North of Spain, the influence of a foreign hand is seen, but it is not the same hand which busied itself in the design of Santiago. And by way of parenthesis, let me call your attention to the exact similarity of the clustered piers in all these examples, a similarity which is carried out in all the other details.

At later periods it is equally certain that foreign architects imported their Northern art into this Southern climate, and Toledo, Leon, and Burgos Cathedrals are distinctly the works of foreigners brought from various parts of France for the purpose, and with no transitional works on the soil leading up to their perfect development. They were the works of foreigners undoubtedly, but of men who did not come from the same parts of France; and Toledo alone, I think, shows in its original design any evidence of the effect of the national art upon the architect: for here in some respects, and notably in the design of the triforium of the choir, it seems as if the popular architecture of Toledo—which was Moresque long after the Moors had ceased to rule—had slightly affected the French architect. Another evidence that these churches were the work of architects unfamiliar with the country may be seen in the failure to adapt their work to the climate. It is indeed strange to what an extent this mistake was perpetrated. Romanesque architects all over Europe built with window openings suitable to an Italian sky, but quite unsuitable to German, French, or English skies. Their mistake was corrected as time wore on by the development of native artists. But as soon as these in their turn left their own land to build churches abroad, they built just as they had been used to build at home, so that, *e. g.*, at Leon we see a cathedral which is window from one end to the other, as if the only object in a hot country was to let in as much sun as possible, and we see exactly the same mistake made by the German architect of Milan Cathedral. Gradually in Spain, as elsewhere, the influence of native artists—first among whom is Jayme Fabre of Mallorca—is seen in the design of the fifteenth and sixteenth century churches, where the windows are as small in proportion to their area as those of the old Romanesque buildings, and carefully adapted to the climate of the country.

It is a little difficult to find evidence of an intentional copying of one man's work by another, or of a distinct recognition on the part of employers of the advantage of such a course. But this is solely because we have so little documentary evidence of what happened in the Middle Ages. Depend upon it they were much more like our own times than we are prone to think. Take this story of the building of the cathedral tower at Valencia. Here we have it in evidence that by a deed made May 18th, 1414, before the Notary of the Chapter, it was settled that one Pedro Balaguer, who is termed "an able architect," shall receive 50 florins from the fabric fund of the new Campanile, "in payment of his expenses on the journey which he made to Lérida, Narbonne, and other cities, in order to see and examine their towers and campaniles, so as to imitate from them the most elegant and fit form for the Cathedral of Valencia."

The result of his journey was a design which, though it differs now considerably from that at Lérida—having been very long in building—is still founded upon it; and that his course was not an uncommon one may be judged by the fact that in this part of Spain the steeples of the fourteenth and fifteenth centuries are almost always octagonal, of the same type, and derived originally, I am inclined to think, from Romanesque examples, which in this part of Europe were generally polygonal.

The steeple builders of Valencia were not peculiar. If we turn to Caen we shall find a very remarkable example of the same kind of imitation by one architect after another, of an admirable early type. So far as I know, the earliest example of these beautiful spires is one of those at the west end of the Abbaye aux Hommes. Here the ingenuity of the spire builders was such that they crowned the two Romanesque steeples with two designs for spires, differing from each other in important particulars yet harmonizing admirably together, and each of them full of ingenuity in plan and design. These spires fructified amazingly. They were wedded to steeples whose belfry stages consisted of an arcade of four, the two central arches alone being pierced. Of all designs for spires they are among the most beautiful that I know, but they are purely local, their habitat being Caen and its neighbourhood, with off-shoots extending westward as far as the famous Notre Dame de Kreisker at St. Pol de Leon, and for aught I know farther. But the remarkable thing here is, how the thirteenth century architect influenced, not only the men of his own day but also those who followed him for three centuries.

And here let me notice the remarkable way in which a passion for building domical churches affected certain localities. Whatever the exact truth may be about the Venetian colony at Perigueux having introduced the dome into Perigord, there can be no doubt that from thence it ramified into all the surrounding district, without in the least degree affecting other provinces. Cross the Pyrennees and you will find in the three neighbouring churches of Salamanca, Zamora and Toro, examples of another attempt of the same kind of which I know no other examples, and which must all have owed their origin to the fancy of some one architect, for there is nothing leading up to or suggesting them in older works.

The ground plans of some buildings appear to me not unfrequently to shew evidences of the same hand in their design. Many of you know—all of you ought to know—the beautiful Liebfraukirche at Trier. Its plan is, in my judgment, one of the most beautiful ever devised; so simple, so well proportioned, and, in spite of its real simplicity, so intricate from some points of view. It is truly a *chef d'œuvre*. If you compare the plan of it which hangs on the wall with that of S. Ived at Braisne, I think you will agree with me that it was by no freak of fortune that the two churches were designed so exactly on the same lines. You will see that, if you draw a line through the centre of their transepts, the portion to the east of the line is alike in each. Either one was copied from the other, or they were both designed by the same man. If this last supposition is true, how interesting the fact becomes when we look at the different character given to the two buildings by the planning of their western portions—that in the Liebfraukirche completing a circle by the repetition of the eastern half, and that of Braisne taking the usual shape of the normal nave—whilst in the designs of the elevations there is little similarity, one church having a triforium, whilst in the other the clerestory is begun immediately over the arcade arches. In a church at Metz—my notes of which I have unfortunately lost or mislaid—we see, as nearly as may be, I believe, the same plan, with again a different treatment of the elevations. And even if these churches are not by the same hand they show at any rate, very well, how imitation of one man's work by another led to very interesting graftings of one scheme upon another. The district in which these churches occur seems to me one of special interest to us in pursuing the kind of study I am recommending. You know how our Northern Gothic developed from two streams of Romanesque and Byzantine art, the one following the course of the Rhine, the other travelling northwards by the valley

of the Rhone, and by Aigues Mortes, Toulouse, Perigueux, and Poitiers. The former maintained its sway much longer than the latter, which soon passed through one phase after another of ever-vigorous life, culminating in the noble thirteenth-century art of the Ile de France. But after a time we see the German architects and those of the Ile de France gradually influencing each other, and a style arising from the contact of their different systems, which has a character entirely its own. The churches I have been just mentioning are one evidence of this. So are most of the churches of Lorraine and Champagne —notably the grandest of them, Laon Cathedral. If you compare the steeples of Laon with those of Bamberg Cathedral you will, I think, see the connection, and will agree with me that on both sides of the Rhine you have a joint influence—on the East, the French affecting the German, and on the West, the German in his turn affecting much of the Eastern part of what we now call France.

There is, however, no time to mention a tithe of the instances which crowd on one's memory as one thinks of the evidences of the same man's work, or its influence on another's, and if I am to say a word on any other part of my subject I must at once leave this part in your hands.

The third way in which changes came over national schools of art, which I named, was that which might be caused by the movements of trained bodies of men, such as (*a*) Freemasons, or (*b*) Religious Orders. I must confess that I don't much believe in the former. Of course some Freemason will tell me I am wrong: but the mischief of it is that the obligation of secresy is so religiously kept by all modern Freemasons, that for fear we should learn too much of their mysteries, they prudently seem never to make use of any of them in public, so that if our art gained anything by them in the thirteenth century, it seems to gain nothing from them now—a fact which is perhaps almost as much a matter of regret in their own interest as in ours! But that masons forming guilds or confraternities, ruled by trade rules, and then just as now very nomadic in their habits, would exercize a large influence on the art of entire districts, cannot be doubted. All the evidence which I have been adducing, and which old buildings exhibit to my eyes, is against the belief that masons travelled very far afield. Just as they do at the present day, old masons preferred working in stone to which they were used, and so they seldom, I believe, travelled beyond the limits to which their favourite stone was carried. But in the case of Religious Orders, I think we must all agree that there was at least great chance of their frequent connection with foreign houses, of their habits of travelling, and the like, in themselves leading to a great infusion of foreign art wherever they existed. But besides this, there is the much more important fact that some of the great orders had precise and exact rules as to the shape and relative position of most of the buildings which went to form the vast whole of a mediæval convent. The example of the first Cistercian House in Spain is much to the point. Here—at Veruela—we have a church and convent planted on the further side of the Pyrennees, and beyond all question showing both in the plan of its church with its beautiful chevet, as well as in what remains of the conventual buildings, an exact compliance with the rules as to building of the mother church of the order at Clairvaux. Nor could this be wondered at when we know that the first monks of Veruela were Frenchmen, and took with them, no doubt from Clairvaux, their master mason as well as all the other necessary officers.

May we not account for the very foreign character of such a design as that of the porch in front of Fountains Abbey, and the arrangement of the vaulting in its aisles in a somewhat similar manner? Fountains had a most intimate ecclesiastical connection with the South of France, and what more natural than that one of its abbots should have tried his hand at importing something like one of those southern cloisters of which every one can feel the charm?

Closely allied to this sort of influence is that which was caused by conquest or colonization of one country by another. As a rule, conquering people bring the arts with them, and perhaps Spain affords a solitary example of a race dominant after a fierce struggle, employing the defeated enemy in

the arts in which he was proficient. Yet this was the case wherever the Moors continued to dwell after the Spaniards had regained dominion in their land.

In England there can be little doubt that we owe much of our art to the success of the Norman invasion, whilst Ireland and Scotland afford remarkable cases of purely foreign art introduced into portions of the country. In Ireland you find the most pure South English art in almost all the buildings erected within the English Pale. In Scotland you find churches of the finest design, such as Elgin, Arbroath, Holyrood, Dunblanc, and many others, evidently built by English architects in the best and purest way. And in Spain, whilst the contest with the Moor was going on, people were too hot-blooded to have time for aught but war, and you see French Bishops going to fill Spanish Sees, and taking with them French architects to build cathedrals in their own French style.

The great convent at Assisi is a case of curiously mixed origin: I believe its architect was a German, but if so he was one of those who lived near France, and was much influenced by French work; so that its origin is doubly complex.

The church of St. Andrea at Vercelli is a case which has been often quoted. It is talked of as an English church built by one who had been ambassador for many years in England. In truth there is nothing whatever English in its character, but much that may be French; but at the same time local workmen or architects have largely modified the design of the exterior to suit Italian eyes. No doubt Cardinal Guala had learnt to admire Northern Gothic during his long sojourn in the North of Europe, and aimed at introducing a new style into his native country. And his work is interesting evidence of the eddies and back currents which led the stream of art back again often times to its source. In the first ages of mediæval art the whole progress was from South to North. But as the vigorous natives of the North mastered and developed the principles of the art, here and there the stream turned again, and so not only do we see German traceries in the little mountain churches on the southern slopes of the Alps, but we have also a Milan, a Genoa, a Vercelli, an Assisi, as well as the still more distant works executed by the Normans in Sicily, and the Aragonese in Naples, of which I cannot speak, save by hearsay.

In the case of such a church as St. Mark and some of the early palaces at Venice, one cannot doubt that the design and detail is almost entirely Eastern. But these early Eastern buildings at Venice largely affected the character of the later Gothic into which her architects developed; and then when the style was well fixed there, you see it transplanted to some places in the immediate neighbourhood, but never travelling very far, so that to the end it is a local variety, peculiar to a small district. In Vicenza alone does one see a whole city copying and building exactly after the Venetian fashion. There is literally no difference between the type of palace common in Vicenza and in Venice in the fourteenth or fifteenth centuries, and yet when you travel a few miles further you lose all evidence of the work of this particular school of architects. The development of the Venetian domestic architecture of the fourteenth and fifteenth centuries is certainly one of the most remarkable cases of the tendency of men to follow in the grooves they happen to find prepared for them. In the Fondaco dei Turchi, in the Ca Loredan and in other palaces of the same age, so far as we can judge from all the fragments which remain, there was a distinction of a clear kind made between the centre and sides of the façade. The whole front was otherwise unbroken and uniform; but at the sides the windows or arcades were differently spaced to such an extent that no one could fail to notice them. Gradually as the fashion obtained of putting traceried windows in place of arcades, all Venetian architects nevertheless followed the old tradition, and arranged them with exact regard to the old rule. Here, just as in church architecture, it was the ground plan which really created the design. It was a custom—as invariable as our British custom of having a back and front drawing-room, without which no matron is happy—to have in the centre of each

Venetian house on every floor a hall out of which all the rooms opened. This hall naturally had a grand window at its end to light its whole length, and then the rooms on either side were lighted by smaller and simpler windows. This arrangement, which is first seen in the Byzantine Palaces, and which, there can be little doubt, owed its introduction to the special taste of some one artist, was copied and even more decidedly marked for centuries, and affected even the designs of the Renaissance Palaces. It is a remarkable example of a local difference of style which never passed far from the land of its inventor.

It would be a most interesting subject of enquiry if we had time to make out exactly who were the artists to whom are owing the designs for buildings erected during the Crusades in the Holy Land. So far as I can judge, we have here a very strange illustration of imported art. I regret very much that in part want of special (*i.e.* personal) knowledge of Eastern buildings, and in part want of time, have prevented my going into this question as I hoped to have done. Here I will only say that there are certain peculiarities in the sculpture of capitals, in the detail of arch moulds, and in the general character of the design of these buildings, which show a very remarkable affinity to—I might almost say identity with—a certain class of European work which is to be seen nowhere out of the West of France and Spain.

The façade of the Church of the Holy Sepulchre is as absolutely Toulousian or Spanish as it can well be; the very arrangement of the two doors is peculiar; you see it in the transepts of S. Sernin, Toulouse, and of Santiago. The detail of the sculptured capitals is peculiar, and is repeated constantly in early work at Barcelona, as in the old doorways of the Cathedral, in San Pera, and in San Pablo. The same character is seen in the gateway of a Mosque at Nablous. The ruined Church at El Biréh (the spot where the B. Virgin is said to have discovered that our Lord had stayed behind her) shews an arrangement of three parallel apses at the east end with carved capitals of the same character, and all its detail exactly similar to that with which one meets in Languedoc. And it seems natural enough to assume, just as one may in the case of the English Pale in Ireland, that all this art was imported into the Holy Land from the west of Europe, where it become grafted on and affected the national architecture.

I will only mention, to show that I do not forget it, the French influence which is visible in all the later Scotch buildings. There are some nations to whom art has always seemed impossible. Let us assume—as perhaps we may—that nature has been too bountiful to Scotland to allow of her sons troubling themselves much about art. But whatever the reason, it is generally true that before the middle of the fourteenth century most of the Scotch buildings seem to have been constructed by Englishmen, whilst for the next two hundred years the fashion set in favour of a style founded certainly on the late French Gothic, even if not carried out by French architects.

There remains only one head on which I wish to detain you any longer now. This is the influence on style, which is caused by attempts to copy in one age what had been done in some previous time. Now there was not much antiquarianism in the middle ages, but there was just a little. Antiquarianism on a large scale was indulged in only by the Rhenish architects of the thirteenth century. They must have purposely shut their eyes for many years to what was going on in the Domaine Royale in the first half of the thirteenth century. They were proud of their old Rhenish churches, and would not, without a struggle, give up their main features. So in such a church as that noble one at Munster Maifeld, they deliberately retained many of the characteristics of a Romanesque church along with parts and details every here and there, which show an acquaintance with thirteenth-century Gothic.

In somewhat the same way architects in Spain were building completely Romanesque churches at

the very same time that at Leon, Burgos and Toledo French architects, brought there for the purpose, were building magnificent churches under their very eyes of the purest and most advanced Gothic.

Then there are many cases in which we find an architect of one period trying to conform his work to that of an earlier building to which he has to add. At St. Elne on the Mediterranean, near Perpignan, there is a case in point. Here there is one of those cloisters so interesting and so noble to which throughout that part of the world one is used. It consists of arcades resting on coupled shafts, and the shafts, the piers, the capitals and the bases are all enriched with elaborate carving. At first sight, one supposes that one has found a purely Romanesque cloister, all of light marble, and copied, both in general design and in the strange irregularity of its ground plan, from the not very far distant cloister at Gerona; but upon inspection it is quite clear that whilst the west and south sides are of the twelfth century, the east and north sides are of late thirteenth or early fourteenth century work, copied in general outline and design from the earlier work, though natural foliage is freely introduced in place of conventional.

We all know the case of Westminster Abbey, where with what at first sight appears to be excellent judgment, the noble design of the earlier church was continued in the fifteenth century, with so much general similarity that uneducated eyes would not detect the difference. Worcester Cathedral affords another case of the same kind, for there evidently the architect of the nave tried to make his work harmonize entirely in its lines and general design with the thirteenth-century work of the choir. The results both at Westminster and Worcester are not encouraging; both of these attempts at copying are tame and uninteresting compared with what the unfettered work of their builders would no doubt have been; and they may well be compared with the design—almost inspired, one may deem it,—of the nave of Bridlington Priory, where the architect of one side of the nave built upon an entirely different scheme from that which he found existing on the other side, and where, nevertheless, both designs being really full of life and fire and poetry, the eye feels no pain at the extraordinary discrepancies of detail where all is beautiful.

But there is, perhaps, in England, no example of copying so well worth study as that grand old out-of-the-way Devonshire church of Ottery St. Mary. Here we have a church which, though it was built late in the fourteenth century, with transepts formed by its two steeples in imitation of the neighbouring cathedral at Exeter, was nevertheless designed with a clear desire to hark back to earlier examples, and to imitate many of the features of the thirteenth century. So we see nearly all the windows either lancets or combinations of lancets, and so well imitated as to give the impression, until their detail is examined, that they are really the work of thirteenth-century masons. Their detail, however, is so pronounced in all its features as to leave no doubt whatever as to the age of the work. And this leads to the observation which has been often made before, that our forefathers never knew how to copy exactly what they saw. Some men will tell you that because they knew not how to copy we ought not to do so either; and that every one giving reins to his imagination should design just what liketh him best, without reference to antiquity or precedent—in a word, that we should all take courage by the example of that wonderful Strand Music Hall. I venture to dispute any such suggestion most energetically. I see enough of other men's work, and know enough of other men's studies, to know that the most original and most admirable work is that of the men who have studied old buildings the most thoroughly. And I am amused to see every now and then attacks made upon our originality and honesty as architects, by men who tell us our works are mere compilations, whilst if you see any of the designs of those very men in what they are pleased to call the Gothic style, you will find that they are indeed simple leaves taken out of the vulgarest book of specimens, without the slightest power even of copying accurately the work before their eyes, and still less of assimilating or fusing together with any kind of

harmony the various pages from which they get their designs. Depend upon it the more you study old art the less you want to copy it, and the only way to escape from the necessity of simply copying is to devote yourselves with enthusiasm to its accurate study.

With a few words of explanation of the drawings on the wall I shall finish what I have to say this evening.

I have drawn sections of some of the piers of the early Spanish churches to show you how exactly similar they are in their detail. They carry unmoulded arches, and have generally very richly carved capitals. The churches in which they occur are cruciform, with three or more apsidal chapels to the east of the transepts. Their design is probably borrowed from Italy by way of Languedoc, and so far north as Fontevrault we see a church which presents many points of similarity to them.

The plans of St. Sernin Toulouse, and Santiago are drawn to show how extremely similar their design is, even to some of the dimensions, such as, *e. g.* the width of the nave and the width of the bays. St. Sernin is built of brick and stone, and has two aisles on each side of the nave. Santiago has one aisle on each side only, and is wholly built of stone. In other respects their designs are almost identical. They have coupled doors to their transepts, and in the bays between the chapels of the chevet round-headed windows with small circular windows above them.

The plans of the Leibfraukirche at Trier and the Church of St. Ived at Braisne have already been referred to. Here again the dimensions as well as the plans are similar.

The group of Catalan churches has a special interest, and as I believe very few people ever read books on architecture, I may assume that they are fairly fresh, in spite of some description which I gave of them in my History of Gothic Architecture in Spain. They were the work of a school of men the most eminent of whom seems to have come from Palma in Mallorca. The object of the school was to build churches of vast span, usable by enormous crowds of worshippers. They were not without opposition in their own days, as you may see in the account of the discussions as to the building of the Cathedral at Gerona; and though on the French side of the Pyrenees we see the same sort of attempt made (first of all in the old cathedral at Toulouse—and one which no doubt suggested those much later buildings) it is to the Mallorcan or Catalan schools that these plans which I exhibit are due.

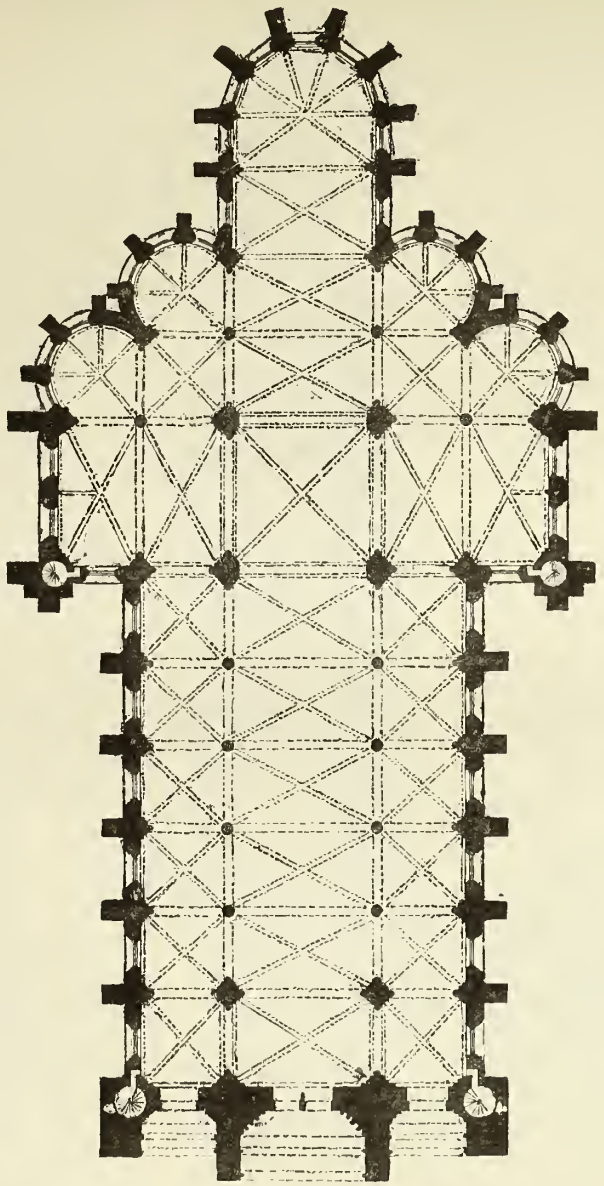
The sketches of the Caen steeples show how a design was formed, adopted and grew by degrees for two hundred years or more. The steeples of Bayeux and St. Etienne, Caen, are early transitional works, whilst St. Pierre and St. Jean, Caen, are both of late fourteenth or early fifteenth century date, and Norrey, Bretteville and Lisieux are works of the thirteenth century. They illustrate a system of copying which kept the main features but altered all the details of the work copied.

The sketches of brick fronts are meant to illustrate what I said about the tendency to sham fronts visible wherever brickwork was much used. The town hall at Munster is an example of a common type of stone façade, which I am inclined to think was derived from the brick façades of which those of the town hall of Lübeck are good examples. They are built simply as screens to hide the roof.

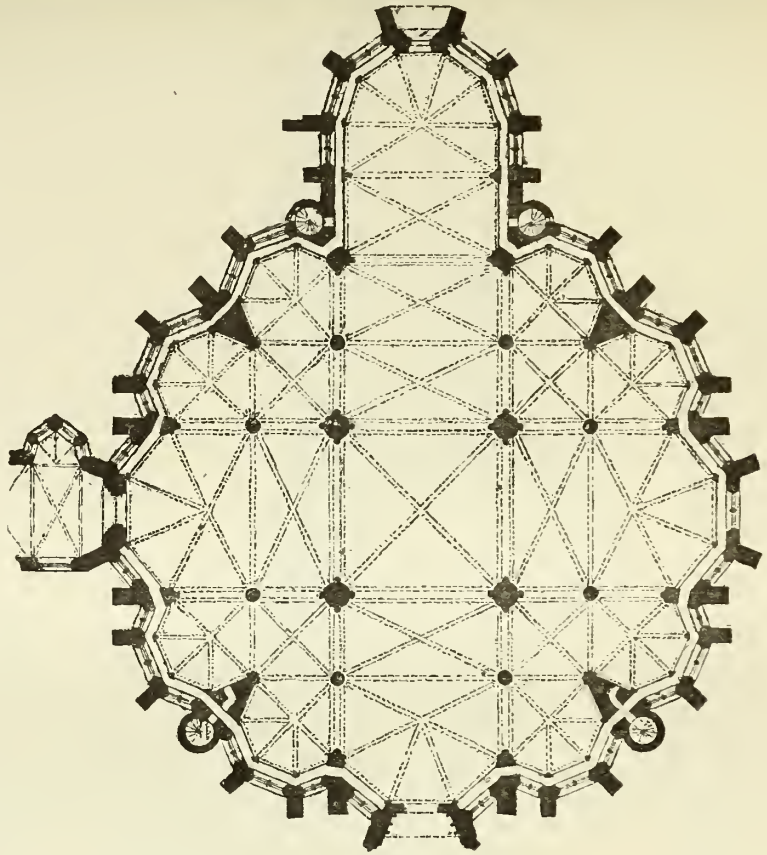
The two sheets of sketches of steeples which have been copied from my sketches in a great hurry are useful as showing how closely one design was adhered to in and about Barcelona. The earliest example here is the lantern of Lérida, which was itself no doubt founded upon the Romanesque octagonal steeples of which in this part of Europe the examples are frequent.

The drawings of the arches at Yatton and Bristol illustrate what I said as to the similarity of the mouldings and the great difference in the proportion of the arches in these two works. The drawings of the arcades at Stone and Westminster will, I think, convince the most sceptical that they were designed by the same man. The shape of the trefoil cusps, the general character and dimensions of the work, all confirm the impression, and the whole of the detail is equally good and marked by the

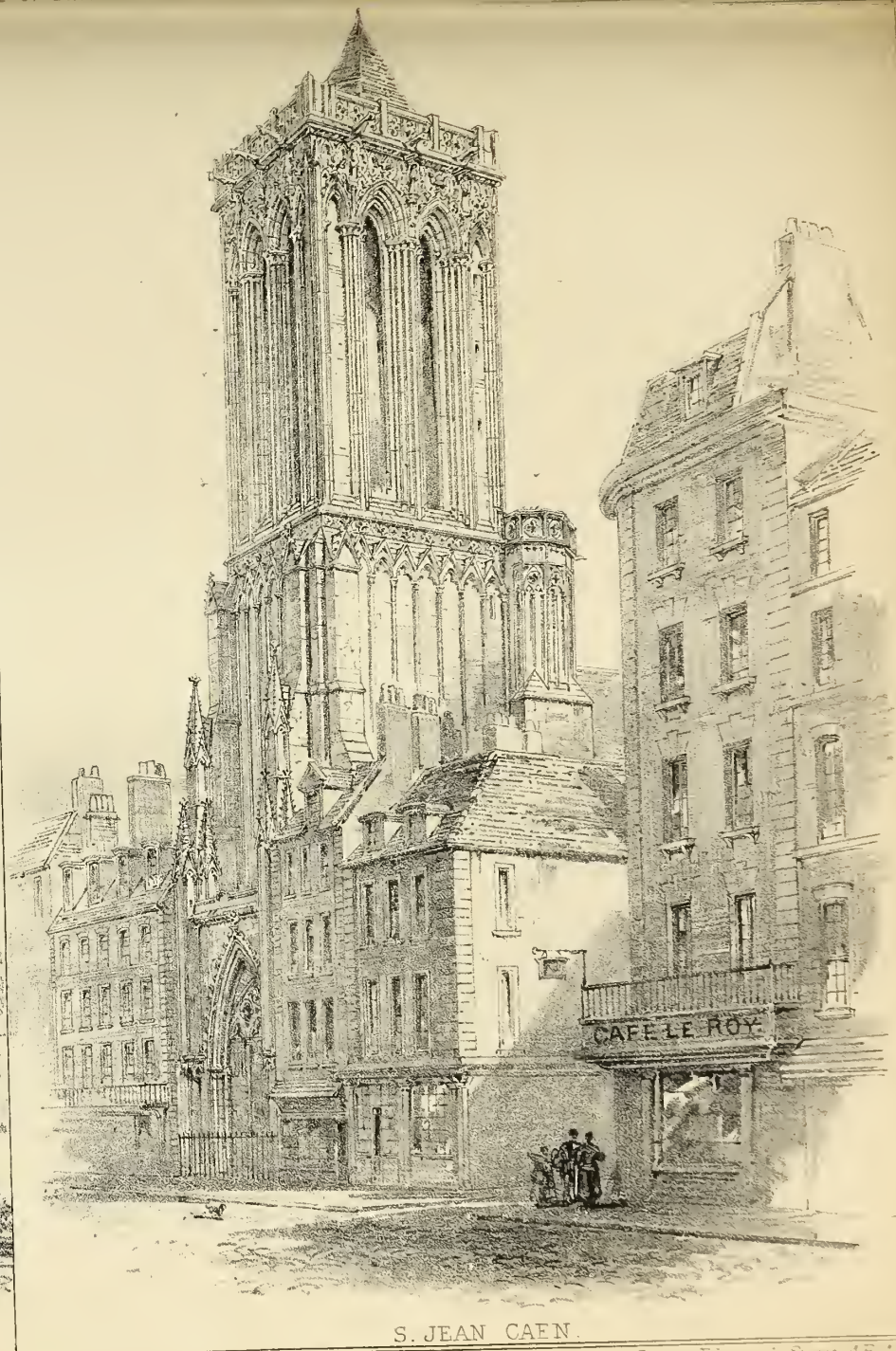
S-IVED-BRAISNE·



NOTRE-DAME-TREVES·



BRETTEVILLE NEAR CAEN.



S. JEAN CAEN.

Lithographed for the R.I.B.A. by Kell Bros Castle St London, E.C.

George Edmund Street A.R.A. del

same peculiarities in both. I intended when I began this paper to have furnished other illustrations of a similar kind from other parts of the world; but time has entirely failed me in the completion of my intention, and I have to throw myself on your forbearance for the imperfect way in which I have completed what I proposed to myself to do. But the truth is, the subject is too large, and all I can pretend to have done is to have tried to give a direction to the studies of some of you which may add to our general stock of knowledge, to your own improvement in your art, and to a better sense of the pre-eminent claims which our national architecture has upon our love and esteem.

There is so endless a variety about its developments that I can conceive no other study which can exceed it in interest; and though I do not wish to advise any architect to busy himself over much with merely antiquarian speculations, I feel strongly that most of those who wish to make progress in their art must sacrifice a little, at any rate, to antiquarianism. They will discover by so doing not only much of interest but at the same time much of edification, and in spite of an unwise sneer of one of our weekly advisers, who said, the other day, that we had found it convenient to give up talking about true principles, they will most certainly find that the one feature which binds together all these apparently divergent varieties of Gothic building is that they are almost always planned in obedience to the then known best systems of construction, and that no architect can ever hope to create any differences of style in his own buildings worthy of admiration otherwise than by perfect obedience first of all to this first and foremost rule of all good architecture.

The PRESIDENT.—I hope that members will join in discussion on the interesting and ingenious paper of our friend, to whom we are very much indebted for bringing this subject so ably before us.

Mr. JOHN P. SEDDON, Hon. Sec.—Mr. Street's paper has been so interesting and full of detail that I merely rise to thank him for the great pleasure it has given me personally. It is almost useless, I think, to add any further examples to the numerous ones he mentioned, for it is evident he has proved his arguments by those he has adduced. Speaking of materials, when he referred to the Norwich screens, some other instances occurred to me which I have myself met with in the West of England, which curiously bear out Mr. Street's remarks. Thus I have found in one or two villages in Monmouthshire, where, in olden time, there could scarcely have been any roads at all, some magnificent screens—the principal beams only of the structure of which seem to have been wrought out of large baulks of local timber, while the ornamental portions, richly carved and perforated, were no doubt brought upon mules' backs from some such manufactories as those which Mr. Street speaks of. At Llangwm Ucha, near Usk, there is a most charming specimen of this kind — perhaps the richest screen I have seen, but somewhat imperfect. Another somewhat similar specimen, almost complete, is to be found at Patricio, near the Abbey of Llanthony. To pass from questions of mere detail, I think if we should get from Mr. Street's lecture the moral which I think it points out, the determination to be a little less anxious to make all our works differ every time, and to be a little less critical with regard to those in which some repetition is observable, it would be well. I think certainly that when an architect has got an idea that pleases him, the best thing he can do is, the next opportunity he has, to endeavour to carry it out to a further point of development, rather than to be continually making fresh experiments, which is too much the fashion in the present day.

Sir M. DIGBY WYATT, Fellow.—The subject chosen by Mr. Street is in itself so large, and so profoundly interesting, and has been treated in so masterly, and at the same time so suggestive a way, that illustrations bearing upon the matter crowd upon one's mind, memory, and fancy, to such an extent that one scarcely knows which to commence with. Probably the first thing that must have been made

apparent to all by Mr. Street is the very decided evidence of the great talent, industry, enthusiasm, experience, and knowledge of his subject, which the paper develops; and I think before discussing any matters of principle or detail alluded to in it, we should not fail to record our gratitude to the author for his admirable essay by the hearty vote of thanks to him which I now take upon myself to propose. The leading moral of Mr. Street's paper, which I, at least, am delighted to recognize, appears to me to point to the larger measure than heretofore of *freedom* it accords to architects specially devoted to what its devotees regard as the pure practice of mediæval art. This, I am glad to observe, the leading Gothic architects of the day gradually concur in recommending to students. We are no longer told that it is absolutely necessary for a building, which affects to recur for its general forms to the style of structure prevalent in a particular country at a particular time, to be cast in conformity only with certain definite forms, accredited by archæologists as special to that special country at that special time. Thanks to such a concession, and with it, we may feel that there is room enough for the talent and fancy of the most imaginative architect to display themselves in full liberty, without overstepping what even a purist would regard as decorous; and with a happy result, provided that such talent and fancy may be exercised within the judicious limits which long, earnest, and careful study of the past alone can define. The obvious carollary to any such proposition is of course the indispensibility of an even increased regard for those monuments, whose leading features must, as long they may exist for our admiration, furnish the best and only sure basis of such study.

One of the most interesting questions treated of in the paper is the greater or less measure of identity of contemporaneous monuments in near or distant localities—the conditions under which resemblances obtain—and how far the existence of a great measure of identity in any such monuments may lead to a just inference that they may have been the work of the same individual either as architect or builder. Any investigation of such questions leads us naturally to a consideration of the nature of communications between countries, individuals, provinces, and ecclesiastical, industrial, and municipal communities, in the middle ages. We know that the difficulties of locomotion were very great, and that such poor means as then existed for the transmission and intercommunication of ideas were constantly more or less suspended or interrupted by the exigencies of war, and other innumerable accidental causes. Yet that there existed a sort of electric current, which ran during the middle ages, through the minds of all, practising art over the whole continent of Europe, we cannot fail to discern and admit. Thus, in architecture, the moment a real important structural change took place in one country, its echo seemed to make itself audible in some other in an incredibly short space of time. In a similar way from province to province and almost from village to village the movement seemed to be propagated.

In the art of painting, the illuminated manuscripts throughout Europe show that the moment a great change of style took place in one country, the leading type of modification was almost immediately reproduced in another, of course with a success or failure dependent upon the special state of technical ability prevalent. Such recurrences, whether in architecture, painting, or sculpture, are interesting, inasmuch as they point, not to few minds working to some common end, at moments we have been accustomed to regard as void and dark, but to a great many. More minds were thirsting for developement, and far more artists existed I believe at such periods than their scanty records enumerate. Hence I am inclined to think that in many cases where buildings of great similarity are even yet found well preserved at no great distance from one another, there may have existed not one man only, but half a dozen different men, qualified by knowledge, and able by conditions of proximity, to have worked upon those several buildings.

Having made, whenever opportunities presented themselves, a very careful examination of ancient drawings of mediæval buildings, I do not believe there could have been in any country, a limited number

of persons who had, or kept open, offices or workshops, in which they produced or multiplied designs. I believe from many documents connected with ancient architecture that the architect to a great extent resided upon the spot, where he conducted the works for which he acted as architect. That he was, in the case of monastic buildings, generally attached, either as a clerical or layman, to the order for which he worked; and that would lead to a considerable identity between the monuments of that order in different places. There seems scarcely any doubt that such "magistri operum," architects, foremen, or master masons communicated whenever they could with each other, and with the heads of their order or craft, and in that way they would work in harmony one with the other, within reasonable limits of space. No ancient drawings I have ever seen have appeared to me sufficiently full, detailed, and clear, to admit of their being worked from by the mason, unless the man who drew the design was resident upon the spot, to amplify and further define his ideas, to make the moulds, and set out the work. A careful examination of adjacent and outlying monuments, particularly of transitional styles, and a comparison of their recorded dates of construction, will often, I think, prove that so many buildings exhibiting identities of transitional styles, lasting for very short periods only, were being carried on simultaneously over a considerable tract of country, that it must have been impossible for any very limited number of architects—provided each one was obliged to remain on the spot, during even the chief part of the time consumed in the erection of the monument upon which he was occupied—to have sufficed to create any considerable number of them. The different edifices we meet with in large districts, exhibiting the marked repetitions of leading elements of design, Mr. Street has so ably and skilfully traced out, are a proof of the short space of time within which they must have been erected. Each monument occupied then what we should now regard as a long time for its construction; while in a very short time only we observe the production of a great multiplicity of monuments of a similar kind.

With these few remarks I will conclude, by calling upon you, gentlemen, to accord a sincere, and unanimous vote of thanks to Mr. Street; though if time permitted, and if it would not be egotistical, one might go on for an hour, enlarging, as I hope some of you may do, upon the numberless points of interest his admirable discourse has opened up.

The PRESIDENT.—I was about to say that I am quite sure all who have listened to Mr. Street's paper will join in the vote of thanks that has been proposed by my friend Sir Digby Wyatt. No doubt the incidents and suggestions which this curious paper has brought to bear upon this very important question deserve very careful consideration, and I dare say many gentlemen are ready to speak, the ice being now broken. Unluckily, I am obliged to leave, for reasons which I need not explain; but before I go I wish to put, I do so very sincerely, the vote of thanks to Mr. Street for the completeness of his communication, and for the great labour and pains and learning which he has bestowed upon it. It is highly creditable to us as architects to have such a man amongst us, and I hope he will one day reap the honour he deserves.

The vote of thanks having been passed by acclamation, Mr. J. Clarke, V.P. took the chair vacated by the President.

Mr. C. F. HAYWARD, Fellow.—Without entering into the many questions so ably dealt with by Mr. Street, I would venture to ask if in looking over his paper it would not be desirable to modify one expression, not indeed in every instance where it occurs, but particularly with reference to the series of spires at Caen and elsewhere, shown in the sketches and referred to in the paper as being *copies* one of the other. I have always regarded them myself as *developments* of an idea rather than copies of one invention. There is to my mind decided originality and mark of growth in every one of these examples, at the same time that there is a direct study of the previous ones. Each seems naturally to rise out of the other, presenting some new feature, though at the same time distinctly referable to the original

model. In passing, I would note that Mr. Parker, in his paper read at this Institute some time ago, treated very fully of the Norman architecture of Caen (January, 1863, Mr. Street himself being in the chair), and suggested some one taking up its history during the Gothic period. This interesting subject has now been touched upon in the paper we have listened to with so much pleasure.

Architects are alternately accused by those who only understand the subject superficially—on the one hand, of copyism and want of originality, then, on the other, of want of sufficient reverence for old styles, and are called upon to produce chapter and verse for all they do, and compelled to refer every part of their work to some precedent or example executed at a definite date. Amongst ourselves the use of the word "copy" by Mr. Street may be understood, but not by others, and therefore I venture to suggest a modification in this instance.

Mr. STREET.—I do not, myself, consider that the towers at Caen, to which Mr. Hayward refers, show such a difference, one from the other, as to entitle the later examples to be called original—they are all copies, with little alterations in the details. The details of the mouldings and traceries are different, but otherwise they are very similar. Their main feature is the arcade of four arches in the belfry stage, the two outer arches sunk to a slight depth, and the others pierced with windows. I think when we see that old architects went on building, for some three hundred years, churches so much alike, and all of which we are not ashamed of admiring now, it is not such a disgraceful thing for a modern architect, now and then, to copy a good thing; at any rate, it is far better than multiplying such fearfully original buildings as, for instance, the Strand Music Hall.

Mr. C. FOWLER, Fellow.—It struck me forcibly while listening to this able, voluminous and carefully-prepared paper, from a gentleman who, as we all know, is very largely engaged in professional work, that it affords an example which might be advantageously followed in this room. Had we a few more of the leading members of the profession, who we know are also largely engaged, who would occasionally kindly devote as much time as Mr. Street had done in the preparation of a paper, it would add very much to the interest of these meetings. It is only a few times in a session that we have as interesting a meeting as this; and we must feel it is partly due to the circumstance that those men who are in a position both from their studies and their practice—for practice after all is the important element—to give to the greater portion of the members such interesting papers as we have had to-night, only rarely do so.

Mr. E. I'ANSON, Fellow.—I think we may fairly congratulate ourselves upon the remarkably philosophical spirit of Mr. Street's paper. I venture to say there is hardly any assembly in Europe where a gentleman of our profession is so well qualified by extensive travel, study, and practice, to have given us such a paper as this. I congratulate the meeting also upon the extremely liberal tone of the paper. It is not a paper, as I think, advocating any particular style of art, but advocating general principles. Instead of limiting our ideas to particular styles, he shows us how general principles may be applied to varieties of styles; and if these are varied throughout Europe, we may vary them in our own practice. We must all admire the knowledge, the learning, and the philosophical character of the paper, and especially the liberal tone in which the subject has been treated throughout. I feel with Sir Digby Wyatt that the subject is almost endless. It is very suggestive and might be made the matter of almost interminable remark.

Professor DONALDSON, Hon. Sec. For. Cor., said—I should be sorry for this subject to pass over without some further observations being made upon it. I had hoped that those who are well acquainted with mediæval art would have carried out the admirable allusions made by our excellent friend on that great subject. There is a chapter in Mr. Fergusson's work on modern architecture, called "The Ethnography of Architecture," in which he shows that much of the principles of art and the peculiar

styles of art are due to the races of men with whom they originated. Our friend has followed this to a degree by examining the same subject, and has shown how much effect the influence of race has had upon the architecture, which we find in different parts of Europe. The French, the German, and the Spanish, and again, the Norman and Byzantine in other parts of Europe. There is the influence of race upon certain productions, which has realised those magnificent buildings, that we find scattered throughout Europe, all having the same impress because they have originated in the same master spirit. I think our friend made a little mistake in applying to one master mind the influence carried out throughout all these productions. There is no doubt there must be an origin of all styles, and there can be no doubt this has been due to construction; the change from Norman to pointed arch was a question of construction; then ornament followed, as the taste of the architect wished to give beauty to those forms. I therefore think we owe it, not merely to the individual who originated the style, but rather to the general enthusiasm of taste of the same general spirit, which infused itself into other minds, and induced them to carry out with like success what had been already invented by one man. Because we must be aware the number of churches, erected in this country in every change of style during the time of pointed architecture shows, that it is impossible for one mind alone to have been employed upon them all; but that there must have been many minds imbued with that taste which prevailed in different buildings of the like sentiment of feeling. Our friend has paid a great tribute to the memory of Rickman—a man whom I knew, for whom I had a great regard: he was straightforward, honest, and had clear preceptions; but I think he owed much, and more than is recognised, to Carter. Carter was the first man who appreciated the differences of the mediæval styles in this country. Our friend also says he thought the architects were inspired in the noble buildings they produced, by the stone upon which they worked. It is not a necessity that bad stone should produce bad architecture. Coventry, Chester, and Oxford all show fine architecture in bad stone. I think very much of architecture and decoration depends upon a favourable material for working; yet I have found the hardest material worked with great elaborateness. In Devonshire and Cornwall I have heard of highly enriched screens in granite.

Mr. STREET.—Have you seen a case of such a screen executed in granite?

The CHAIRMAN.—I have always understood those delicate screens are of wood.

Professor DONALDSON.—I believe there are some specimens in granite, and painted afterwards. The same influences of races to which I have already alluded, obtain, I think also, not merely in Gothic architecture, but in the ancient periods. We find the *differences* in architecture in Ionia and Attica only to be accounted for, but as having been inspired by master minds of different races; and these are not merely copied, but imitated with modifications which are of the greatest benefit to us. I should have been glad if our excellent friend had brought before us a solution of the knotty question of those mediæval palatial façades of Venice, which are of curious style, and their origin so difficult to solve. I would observe that the interior of St. Alban's Abbey exhibits examples of the progress of the most beautiful transitions of style. We find one man working after another, each having his own impress, and giving to the interior a marked variety and beautiful modification of styles, as they follow one after the other. We need more time adequately to treat of this critical lecture, but I offer these few observations out of respect to our friend for the vast amount of time he has bestowed, and the rare genius he has evinced in the preparation of this address.

Mr. STREET.—There is one observation which I would make on what Professor Donaldson has just said. I do not think I was quite understood. I have no doubt the men who worked at the buildings at Coventry and Chester, and who erected the churches in Oxford, thought they were using stone that would last. I confess I cannot say as much for the materials used in this city, which we know very

well, will not last. The Coventry architects built with a real intention of doing good work: the London house builders, at the present day, have no such intention,

Mr. J. FORD.—I take the opportunity of calling attention to one remark that fell from Mr. Street. He referred to the use of hot lime in the construction of flint walls. I may say that is the practice at the present time, and that is the only case, I believe, in which hot lime is used for building purposes. It is very much the practice in Norfolk; but in all cases where flint is used, owing to the cold nature of the stone, hot lime is employed to cement the material.

The meeting then adjourned.

Royal Institute of British Architects.

At the Ordinary General Meeting, held on Monday, the 13th of December, 1869, J. Clarke, F.S.A., Vice-President, in the Chair, the following paper was read:—

ON PUBLIC MORTUARIES FOR LARGE TOWNS.

By William Hardwicke, M.D., Medical Officer of Health, Paddington, and Deputy Coroner of Central Middlesex.

Public attention has of late been prominently directed to numerous sanitary improvements, that would benefit the poor in our larger towns. Amongst these the removal of evils arising from overcrowding is a subject which urgently demands consideration. Any suggestions that would satisfactorily meet some of the difficulty we should all desire to see accomplished, will I trust be acceptable.

Overcrowding, with many families, unhappily necessitates the retaining of the dead amongst the living, not simply in the same house, but in the same room, and that too in cases where death has resulted from a contagious and dangerous disease. Statistical returns show that a large proportion of the working classes live with their families in but one room, and it becomes an important consideration for the legislature, whether houses let out to more than one family ought not to be brought under the sanitary supervision of the Medical Officers of Public Health and inspectors of nuisances with a view to the prevention, as far as may be, of anything likely to aggravate the danger of overcrowding which now prevails to such an alarming extent in most large cities.

It has been the practice to consider that the parochial dead-houses were the proper receptacles for bodies during the short interval previous to interment, and that by such means crowded lodging houses and rooms occupied by large families would be relieved of the presence of the dead in cases, where they might be considered dangerous to the living.

But those who know the wretched accommodation afforded at these parochial dead houses, do not expect much improvement from the transfer of bodies to them, for being connected with parochial management, such buildings are not, and never will be, extensively used by a large portion of the community, who, though poor, have a repugnance to parochial dependence. Hence the conclusion, now very generally acknowledged, that a better kind of accommodation is much needed, in fact, that a public mortuary ought to be one of the institutions in every town and district of the kingdom, open to all without distinction, and as free as possible from all degrading associations.

Under these circumstances, which have given rise to the necessity of a proper place for the reception of dead bodies in various conditions of life, it will not, I think, require special instances in argument to prove to an association of enlightened men the desirability of isolating the dead, in cases of infection, from the living inmates of a house: nor will it, I apprehend, be necessary to enter into details as to the regulations in vogue in other countries.

The inconvenience of the present system has been of late fully acknowledged by the coroners, by the medical profession, as well as by the medical officers of health, and it has been strongly impressed

upon the minds of our legislators. Even in country villages the want of a better kind of public accommodation is felt especially in cases of suicide, sudden deaths, or deaths from violence, accidental drowning, or otherwise, where the corpse is often taken to the nearest public house, much to the annoyance of the proprietor, or persons who are called upon unexpectedly to receive it. It is to be remembered, that no law can compel any one to receive a dead body into his house, and hence it frequently happens that bodies found dead are taken in charge of by the coroner's constable, and have to be deposited in stables, outhouses and sheds, to await the inspection and inquest of a coroner and jury. In our metropolitan parishes and in large towns or boroughs in the country, parochial dead-houses are undoubtedly provided, and there is one in connection with most hospitals in town and country; but they are far from meeting the growing wants of the community, and their management presents a revolting spectacle to those, who have, unfortunately, to visit them. Indeed it is generally supposed that it is only the most destitute paupers or the friendless outcasts of society who find their way to this almost final resting place.

Scarcely any of the metropolitan dead-houses are creditable to the authorities. Those of St. Giles and Holborn at the present time, St. Pancras, St. Marylebone and Paddington were until very recently, disgusting and scarcely fit to enter: the situation is most improper: there is a want of order and propriety in their management, and the persons employed to look after them, being paupers, are not the class who ought to have such responsibility resting upon them.

Those who prepared the Sanitary Act of 1866, had two special clauses, viz., 27 & 28 Vic., inserted in relation to the duty of imposing upon local authorities the providing of proper accommodation other than those dead-houses, that, in many instances are in workhouses for the reception of the dead.

Clause 27:—"Any nuisance authority may provide a proper place for the reception of dead bodies, and where "any such has been provided and any dead body of one who has died of any infectious disease is retained "in a room in which persons live or sleep, or any dead body which is in such a state as to endanger the "health of the inmates of the same house or room is retained in such house or room, any justice may, on "a certificate signed by a legally qualified medical practitioner, order the body to be removed to such "proper place of reception at the cost of the nuisance authority, and direct the same to be buried within "a time to be limited in such order; and unless the friends or relations of the deceased undertake to "bury the body within the time so limited, and do bury the same, it shall be the duty of the relieving "officer to bury such body at the expense of the poor rate, but any expense so incurred may be recovered "by the relieving officer in a summary manner from any person legally liable to pay the expense of such "burial."

Clause 28:—"Any nuisance authority may provide a proper place (otherwise than at a workhouse or at a "mortuary house as lastly hereinbefore provided for) for the reception of dead bodies for, and during, the "time required to conduct any *post mortem* examination ordered by the coroner of the district, or other "constituted authority, and may make such regulations as they may deem fit for the maintenance, support, "and management of such place; and where any such place has been provided any coroner, or other "constituted authority, may order the removal of the body for carrying out such *post mortem* examination "and the re-removal of such body, such costs of removal and re-removal to be paid in the same manner and "out of the same fund as the cost and fees for *post mortem* examinations when ordered by the coroner."

These clauses, like so many others in our sanitary laws, are permissive and not compulsory; therefore most frequently not attended to.

The following cases illustrate of the truth of my observations:—

1. Instances frequently occur of a body being found, when no one is willing to receive it, and no suitable place has been provided for its reception.

2. Cases, where a family live in one room and the death is from typhus, scarlet fever, &c., some member taking the disease and spreading contagion. These ought to be removed.

3. Instances of decomposition take place from delay, and being thus prejudicial to the health of the inmates of a house, demand instant removal to a mortuary.

4. Cases where objection is raised to the removal to a common dead-house on the part of the survivors, but in which a public mortuary would not be objected to.

5. Instances of the necessity of compulsory removal are often called for where voluntary action cannot be depended upon.

6. *Post mortem* examinations should not be permitted in private houses, especially where more than one family resides. A public mortuary is the proper place.

In many cases one has to pass to the dead-house through a row of helpless, semi-idiotic, inmates, who take their "airing" in the immediate neighbourhood of a place whose noisome effluvium assails the nostrils at a considerable distance off. As deputy coroner for one of the largest districts in Middlesex, I have frequent opportunities of witnessing how ill-adapted are the parochial dead-houses for the reception of the bodies of persons, whose position in life among the ratepaying class, ought to have entitled them to be treated with respect.

But even in the cases of indigent persons a proper place ought to be provided, so that the feelings of their surviving friends need not be shocked at the unsuitability and offensiveness of the dead-house to which any of their relations may have to be removed.

In the "Marylebone Mercury" of August 1st, a case is reported of an inquest held at the Marylebone Workhouse, in which the coroner's officer complained that the father of the deceased child had done his utmost to prevent the body being removed to the parish dead-house attached to the workhouse. His explanation was, that he belonged to a burial society, which allowed him £2. towards the expenses of the funeral, and that if once the body were removed to the workhouse premises he would have the greatest difficulty in convincing the members of the society, that it was not a pauper funeral, and they would have great hesitation in paying him the contribution.

He was, he said, a labouring man, but for all that he did not want the burial of his child to be at all connected with any proceedings at the workhouse. Being asked whether he would have any objection to have the body sent to a building not at all connected with the workhouse, and where rich and poor would send their deceased relatives, he at once said frankly that he would not have the slightest objection in that case. This is one example showing the prejudice prevailing with regard to the existing dead-houses, which would be entirely removed by the adoption of the plan now advocated, that public mortuaries should be dissociated from workhouses. But this prejudice has still further ramifications. The office of the Burial Board of St. Pancras is situated, though not in the workhouse, yet on the workhouse premises. The clerk recently expressed publicly his conviction that slight connection between his department and the one for poor relief acted so disadvantageously in the minds of the parishioners, that they did not patronize the Burial Board to the extent he believed they would do if his office were removed elsewhere.

Besides the numerous examples that might be cited showing urgent reasons for the erection of suitable mortuaries for the dead, whose friends would voluntarily avail themselves of such buildings, it frequently happens that in the interests of public justice *post mortem* examinations must be made, but there is no proper convenience at hand in private houses to carry on such operations in an efficient and decorous manner, so as to avoid wounding the susceptible feelings of the living. Some bodies are in a kitchen, top attics, &c., places that are too confined,where there is an absence of light and air,warm water, and cleanliness. In these cases the coroner has power, by the 28th section of the act just quoted, to remove the body to a dead-house for examination, and in an inquest which I recently held, the parents had to leave the house with their two children to sleep elsewhere, leaving the body in a small habitation where three other families resided.

We now arrive at this point—what should be the essential features of a public mortuary, and what the kind of building best adapted for it.

In any plan that may be proposed, two distinct apartments must be provided.

First. The place for the reception of bodies *uncoffined* and brought in, when found dead by the police, or by the coroner's officer or constable, or by the relieving officer; bodies having to await identification, or a coroner's inquest; here also would have to be deposited bodies removed by order of the coroner, or of a medical man for the purpose of *post mortem* examinations; or of persons having died from a dangerous contagious malady, and rendering immediate removal necessary. This would be the dead-house proper. It ought to have fittings for *post mortem* examinations, plenty of light from above, good ventilation, a supply of water, and of deodorising and disinfecting agents, a marble or slate slab with sloping inclination towards the middle, and a fall for drainage into a pail or a trapped sink. On two sides of the room marble slabs, two feet wide at least, ought to be placed for bodies to lie on. Here bodies may have to await the undertaker to place them in shells or coffins, and afterwards to remove them to the mortuary. Spare shells or coffins should be at hand on a shelf for any sudden emergency.

Second. The mortuary proper should be a large building capable of receiving ten or twelve bodies in shells or coffins, to be placed on trestles or on a centre slab (to be regulated by the requirements of the town where situated,) here to await interment. In Clerkenwell, iron moveable brackets are used for coffins to be placed upon, and when not in use they fall back. Catacombs, or cells in slate or brickwork may be proposed, if desirable, and the body might be closed and locked up until removal. The relatives would come here to inspect the coffins, and the funeral might start from the place.

This building must have some pretensions to ecclesiastical and ornamental architecture both externally and internally, and any attempt to associate it with the idea of its management being concerned with the parish or with poor relief, ought to be most strenuously avoided. I am not aware that any plans have as yet been offered on approval better than those furnished to illustrate my remarks.

This most important point connected with public mortuaries must not be forgotten, viz.: the removal of the idea that the institution is a parish dead-house; otherwise respectable persons will not be persuaded to allow their deceased relatives to be removed to it. When that is accomplished, and persons have a conviction that an air of sanctity and security is maintained, the first difficulty in overcoming any prejudices against public mortuaries will be removed.

The object will be gained by attention to two things:—

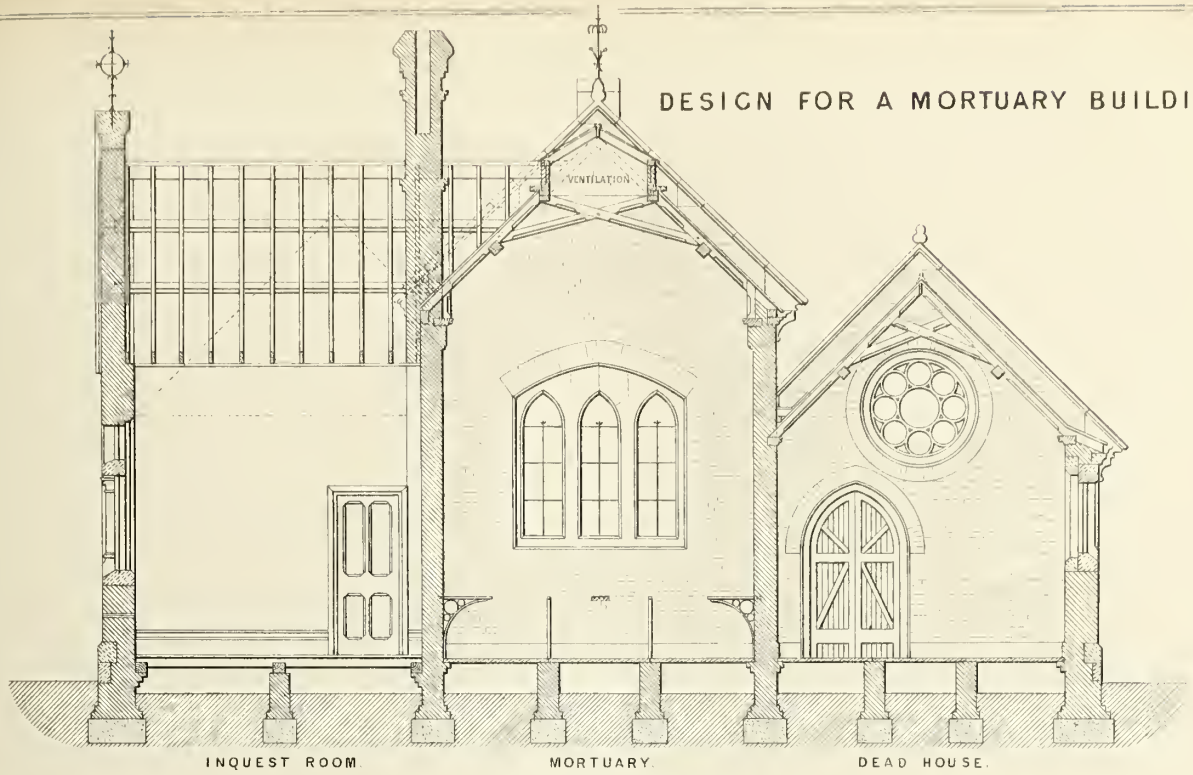
First. The efficient management by a competent sexton.

A public mortuary should be provided with a resident attendant, whose duty should be at all times to receive under his charge bodies brought to him by the police, or by the coroner's constable, or by order from a duly qualified medical man, and that the bodies of persons brought by relatives or friends, who guarantee the expenses of interment and removal under fixed rules, be signed by them also that he receive the bodies of persons found dead and who are unknown. The attendant should be responsible for the proper cleansing, disinfecting, and ventilating the rooms generally, and particularly that used for *post mortem* examinations.

He should be required to keep a mortuary register, in which should be entered the name, and other particulars of persons brought in, the names and conditions of the persons, who are responsible for the removal and for the expenses of the interment of the body deposited, and that a register be kept of the house and place of removal, and of the manner in which the removal has been effected.

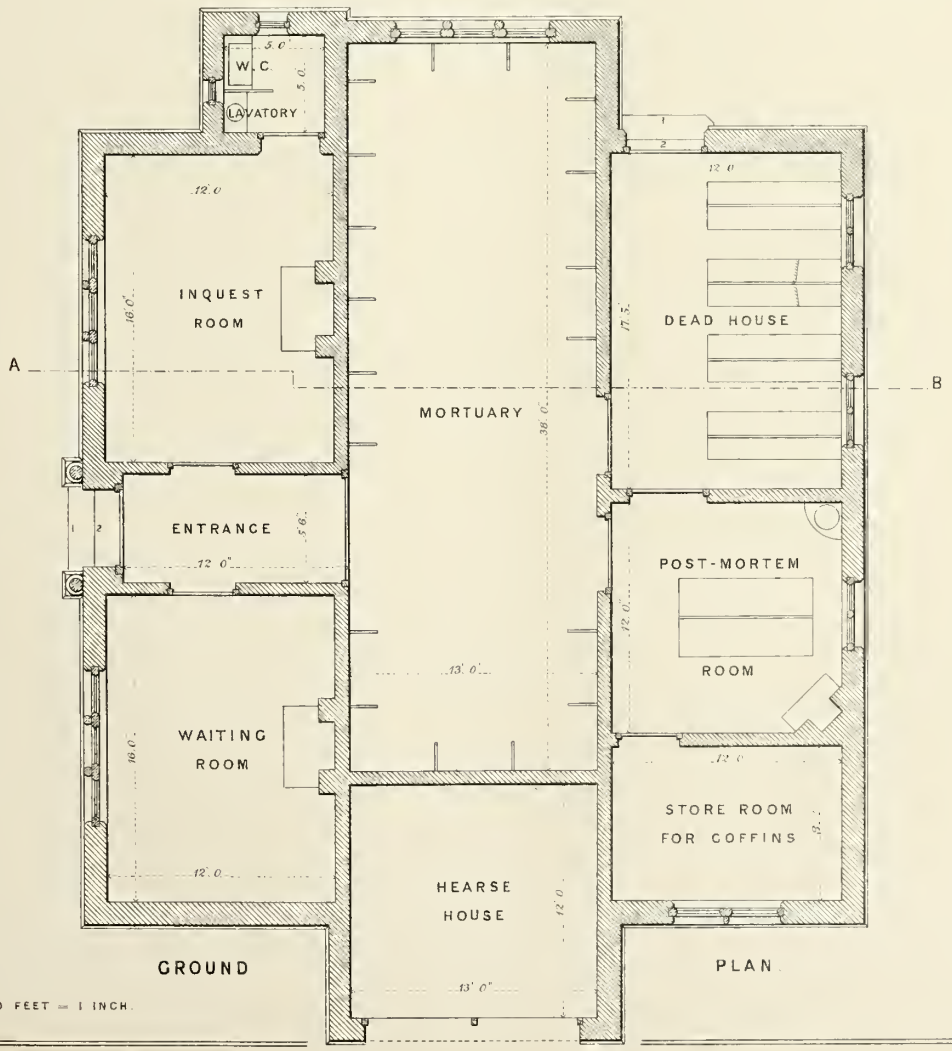
He should be also required to give notice at the police station or to the coroner's constable when a body has been admitted which is unknown, as well as to the parish authorities and undertaker and

DESIGN FOR A MORTUARY BUILDING.



SECTION ON A, B.

SCALE 8 FEET = 1 INCH



GROUND PLAN.

SCALE 10 FEET = 1 INCH.

ALBERT BRIDGMAN, INV.T
105, LONDON WALL, E.C.
NOV.R 1869

Lithog.d for the RIBA by Kell Bros London E.C.

contractor for the burial of the bodies not claimed or known, and also to the persons who have to remove or bury after a coroner's inquest or otherwise. The public should have free access at certain hours either to visit or view the bodies of the persons deposited, or for the identification of bodies found dead and unknown. In the plan submitted herewith most of them provide accommodation for coroner and jury, as well as a *post-mortem* room. In certain hospitals, lunatic asylums and many London parishes, the custom of a coroner and jury going to a public-house to hold an inquest is rendered unnecessary, for a suitable room is provided by the authorities, and a degree of dignity is thus attached to the proceedings, which it is almost hopeless to expect to be the case amidst the din and bustle of a tavern. The Middlesex and University College Hospitals, the Royal Free Hospital, Gray's Inn Road, and the Marylebone and Holborn Boards of Guardians may be mentioned as instances where the inquests are permitted to be held in a board room.

Secondly. The choice of a situation is of importance.

In the metropolis and in most large towns a very general approval will be given, that the best site is that of a closed burying ground or old churchyard. These are generally in central situations, and a less objectionable site could scarcely be named. In the parish of Marylebone a faculty has been obtained enabling the vestry to construct a mortuary in a disused burying ground, and after an inspection of the plans the rector, Rev. C. I. P. Eyre, though at first opposed to the proposal, was so much struck with the proposed improvement, that he has given his cordial adhesion to it. I exhibit a plan of the Marylebone structure, which is very simple, but I am afraid not altogether adapted for its purpose.

It would be also much in keeping with these unused burying grounds if the walks were well attended to, if they were tastefully planted with evergreens and ornamental gardening, and in shady places seats might be placed for the accommodation of persons who would be glad of a retired and quiet place within easy distance of their dwellings. The residence of the keeper might be at a lodge in the entrance, or as near as possible to the mortuary itself. The cost of these buildings and the mode of raising funds for their erection and maintenance ought not to present any great difficulties with municipal authorities.

The law gives authority to Local Boards of Health, and the Burial Acts have likewise power to levy and appropriate funds for the purpose here indicated.* The estimate for the building or site will of course vary according to the special circumstances of each case, but from the experience of what has been done already it may be stated, that an outlay of from £300. to £1,000. would be the amount likely to be required. Mr. Hutchinson, the Mayor of Liverpool, gave £1,000. for the erection of a public mortuary, and the letter from him expressing his sentiments on the subject is well worthy of perusal. He said—

"Apart from the inevitable consequences of such a state of things being most prejudicial to health, the "practice of retaining the corpse within the chambers of the living, amidst filth, squalor and wretchedness, "begets a feeling of irreverence and indifference, and the abandonment of those religious feelings which ought "to be associated with the obsequies of the dead. Nay, more, it has a positive demoralizing and brutalizing effect "upon the minds of the people; and any scheme which has a tendency to lessen the evil is worth the experiment, "even if it should prove abortive. I am fully alive to the difficulty and delicacy which surround the question. "The poor feel as acutely as the rich the loss of their friends, and we must not hastily and perforce do violence to "their natural feelings even in our attempt to serve them. Hitherto no plan has appeared to myself as feasible; "but the scheme you have now in view goes far to arrest the evil, if the poor can only be brought to understand how "much it is for their own advantage. So strong is the conviction forced upon my mind of the necessity of making "an attempt to grapple with this frightful condition of affairs, that if you think you see your way clear to the adoption "of your scheme, I will cheerfully undertake to defray the cost of erecting such a building as you propose."

* Burial Acts, 15 and 16 Vict., cap. 85, ss. 41, 42.

In connection with this subject it may be mentioned, that a hand-hearse or fever ambulance might be kept in a shed attached to the mortuary; thus the difficulty now experienced as to where to keep these vehicles owing to their objectionable character, would also be avoided. Disinfectants might be stored or kept here, and the person in charge should be required to possess a knowledge of Stenhouse's method of using dry charcoal for deodorisation, or other means for making the room and coffins fit for view by those who have to enter, and thus the mortuary would do away with the annoyance and disgust now existing amongst jurymen and others in having to visit the parish dead-house in pursuance of their public duty.

In conclusion, gentlemen, I would simply remark, that I have endeavoured to place before you only that aspect of the question of public mortuaries most familiar to myself, and at the same time those facts least known to yourselves: believing that in the discussion and opinions which may arise you will be somewhat facilitated in your judgment of what architectural adaptations would, under these circumstances, be required to meet the approaching necessities of an advancing civilization.

Professor DONALDSON, Hon. Sec. For. Cor.—I am sure we must all feel very much obliged to Dr. Hardwicke for bringing a subject of this nature to our notice; because, though it is one of comparatively minor consideration in an architectural sense, yet no doubt it is one of considerable public importance. I am myself a member of a parochial board, before whom this subject has been recently brought, and I may say I take some shame to myself for not having given more consideration to some of the points that were there considered—that is in respect to the architectural features which should be given to such a building. I have myself built a hospital, and attached to it a mortuary, containing an examination room and other features pointed out by Dr. Hardwicke as required in buildings of this character. But in that case it formed part of the composition of the building, and to a certain degree had architectural features. But in the case to which I have referred, it is proposed to erect a mortuary in the stoneyard of the parish. The surveyor submitted certain drawings, but they had not that architectural appearance which I thought they ought to have, and I took upon myself to make some suggestions; because I do feel that when we have to deal with a subject so solemn as the remains of the departed—when we know how many feelings are associated in the minds of those who are connected with them by affection or other ties, we ought to pay the utmost respect possible to those susceptibilities. We are therefore indebted to the gentleman who, in bringing this subject before us, has asked us, as architects, to turn our attention to this subject. Wherefore is it we seek to make our churches architecturally attractive? Not to please the rich, but to put the poor in places where the feelings are raised to the sublime subject of the worship of the Almighty, instead of a mere barn or shed in which to hold their religious services. When I was in Paris two years ago, I went to see the new Morgue behind Notre Dame, the public dead-house, in which are deposited, for public inspection, the bodies found floating in the Seine, or of those who had met with their death from accidents or other causes, and were unclaimed. It is not merely a hovel, nor a common shed, but a building with some architectural pretensions, and affording considerable convenience; so that those, who have occasion to visit the impressive scene, are not huddled together, but treated with respect; and the remains of the dead are deposited there with a certain degree of thoughtful consideration. We are indebted to our friend Dr. Hardwicke for the information he has conveyed, and the suggestions he has made as to the manner in which we should apply our minds to this interesting subject, and I beg, in conclusion, to propose a vote of thanks to that gentleman for the communication with which he has favoured us.

Mr. WYATT PAPWORTH, Fellow.—I have very great pleasure in seconding the motion, and have nothing to add to what has already been said, excepting, I think, the structure, though small, is one which requires a little further consideration as to the name to be given to it. We may give it the name of mortuary, but I doubt whether it would be properly understood by the class of persons who would chiefly benefit by the erection of such buildings. They would hardly understand what a 'mortuary' is, and the only alternative would be to call it a dead-house, which might be repulsive to their feelings.

Professor DONALDSON.—It might be called a mortuary chapel, and people would soon become accustomed to this modified term.

After some further remarks, during which the Chairman observed, that the *Ecclesiological Journal* had taken the matter up from an architectural point of view some years ago, the discussion was brought to a close, and a vote of thanks was unanimously passed to Dr. Hardwicke for his paper.

THE SYSTEM OF TENTS AND BARRACKS IN HOSPITALS.

By Dr. Oppert.

Hospital tents were used by the Romans of old in time of war, but recently they have been constructed on the area of hospitals to be used in time of peace. It seems that Frankfort-on-the-Maine was one of the first cities where a hospital tent was recommended to be tenanted by patients with surgical complaints, and during the last two or three years more of them were attached to the hospitals of German towns. They are rarely found in this country, but some of a peculiar construction were recently built in Paris. Flying roofs, covered balconies, have been used in a similar manner, and during a recent visit to Bonn, I found the patients even in the open air under the trees of the park, whence they were of course removed to their wards at night.

But as the tents are not destined to play a great rôle in hospitals, and as they already begin to be supplanted by more substantial buildings, I shall not describe them here, but pass at once to the latter, which are at present known under the not very appropriate name of hospital barracks. During the American war in 1864, the minister of war, Stanton, ordered barrack hospitals, or pavilion hospitals to be built, which were of large dimensions and peculiar construction. They had a length of 187 feet, a width of 24 feet, were generally one floor high, and had ridge ventilation. They were found exceedingly appropriate for the treatment of patients on whom surgical operations had been performed, and it struck Esse, of Berlin, two years ago that they might be imitated. He had one built in the Charité Hospital, which he describes in a recent work, and others are now in course of construction in Germany, viz., at Kiel and Leipzig.

The name is derived from the light and temporary character they had at first. For instance, in Hamburg one existed which was almost exclusively built of canvas, another of wood and canvas, but the Berlin barrack had already walls of wood and brick. This structure is 105 feet long, including two verandahs of $10\frac{1}{2}$ feet width at both ends, and 37 feet wide, including the galleries on each long side. The latter are only $4\frac{1}{2}$ feet wide. It is 3 or 4 feet raised from the ground, at the sides $13\frac{1}{2}$ feet high, at the ridge 19 feet. The walls are formed by hollow bricks, lined inside and outside by vertical boards painted with oil colour. The roof has three layers of wood; the floor, which is hollow, only two. The roof is sloping, and has a second roof along the ridge 3 feet higher—both covered with tiles. Twenty patients are accommodated, and small rooms are partitioned off. The side windows and the ridge windows both are provided with glass louvres. Two tile stoves with air channels stand in the room, and an iron column passes through them, it extracts foul air by way of the hollow floor. At Greifswald, a university town, a similar but less substantial structure exists. At Leipzig, an old hospital has been given up, and a new orphan asylum, which became empty by having the children removed into the country, is destined for the new hospital, to which fourteen barracks are to be added. Four of them will be in no connexion with the others, which have a common corridor. The late asylum will serve for administrative purposes and a few wards. The barracks have a similar construction to that of Berlin, but no side galleries, and the water closets are better placed.

A new small lazaretto is built at Berlin, where two barracks lie on each side of a centre building, which contains the administration and some wards. The barracks of Kiel are already made of solid masonry, with sloping roof and ridge ventilation.

Before I describe the usefulness of these buildings, I may mention what we have here to be compared with them. The clinical wards of Guy's Hospital, which are at least twenty years old, are one-floored, and have a broad ridge supported by columns, and windows or louvres at the sides of the

portion forming the ridge. The new Fever Hospital at Glasgow is one-floored, and consists of four pavilions, three of wood, one of stone, the roof has skylights which may be opened by ropes. A small fever house has been completed this year in the hospital enclosure at Chester, it has two wards one floor high, nothing than the roof above, which is open to the action of the winds, and the ceiling of the ward communicates with it. In India there exist some structures with roof ventilation and verandahs all round. They are also raised on pillars.

Still it is a novel thing to use these structures in the peculiar way they are used. They form appendages to the hospitals for patients to be transferred who have undergone surgical operations. These generally have made rapid remarkable recoveries. Eminent surgeons are loud in the praise of the barracks, and it is true that the air in them is very sweet. The patients are very contented, and feel happy in the large and airy wards.

Of course much can be said against these buildings. If they are constructed of wood, or partly of wood, which is recommended for cheapness, there is the danger from fire ; if without means of heating they are not at all cheap, as they can only be used during part of the year; in cold climates, Russia for instance, they could not be used; even in Berlin and Greifswald, it is sometimes difficult to maintain a convenient temperature, and the stoves consume a great many coals. Repairs of the glass louvres may become frequent, rents between the boards have happened, especially at the roof, the floor sounds hollow, and they may not always maintain their reputation for high salubrity. For military hospitals especially, their use is limited, the third part of the soldiers in hospitals are venereal cases, and the others mostly of trivial importance.

As to the likelihood of their supplanting all other hospitals, I do not consider it at all probable. There are a great many chronic diseases of the lungs, the heart, the kidneys, the stomach, the bladder, besides cases of rheumatism, and mental disorders which need not be accommodated in barracks. The system of tent hospitals might be extended to fever patients, but not to all patients. Their success proves that it is not desirable to have many floors to a hospital, else the roof ventilation is impossible. It also proves that the construction of a hospital building has a material influence on the progress of the disease of the inmates. It proves that the admission of good air from above, and the escape of the foul one below, is the right plan, and that the fresh air should not be allowed to enter through the flooring. If barrack hospitals should become more common, this would be another step in the direction of abolishing large buildings containing many hundred patients. Perhaps the best mode of constructing a city hospital may be the pavilion plan, some of the pavilions being two floors high, others of one floor only and barrack-like, the administration building being separate.

Professor DONALDSON.—We are very much indebted to our friend Dr. Oppert for this kind communication. As he has said, on occasions of epidemic fever, such as that now raging in this metropolis, it is essential for us to be masters of the subject of temporary additions to the accommodation of these occasional patients. There is no doubt, that at this time arrangements are being made for the erection of buildings for these, it is to be hoped, temporary purposes. Of course it is most desirable, that the conditions, so clearly explained in the paper just read, under which they may be made effectual, combined with economy and due attention to sanitary considerations, should be understood and confirmed by the experience already gained in other countries on the subject.

The thanks of the meeting were unanimously acccorded to Dr. Oppert, for his paper, at the conclusion of which, there having been no discussion on it, Professor Kerr drew attention to the following subject.

CALCULATIONS OFCRUSHING WEIGHT.

Professor KERR, Fellow.—I desire to bring before the Institute a scientific problem which has arisen out of the accident at the Holborn Viaduct. It affects the highly important question of what is called *Crushing Weight.* On looking into the books with some care, I find, so far as I can see, no kind of sufficient data on which to determine such a case as that of the Viaduct. All architectural students are aware that there are tables of so-called crushing weights. These tables are derived from experiment. Various materials are set forth, and the weights tabulated which they are found to be respectively able to carry *per square inch of horizontal section.* [Professor DONALDSON—Under like conditions?] No; without stating anything about conditions; for example, a granite shaft of so many superficial inches of horizontal section would crush, according to the tables, with so many tons weight—say, for a granite shaft, 3 tons per inch, irrespective of all else.

Now as regards the failure of the Holborn Viaduct (and I hope it will be distinctly understood that no question of responsibility for the failure itself is to be raised in discussing what I may say), it is clearly apparent that the failure may be looked upon as a question of crushing weight; for this term "crushing weight," in the sense in which we use it, is meant to cover, somewhat vaguely, and in a very general and comprehensive way all effects of breakage which may be produced by the compressive strain; and, accordingly, looking at the matter in that light, it is obvious that those granite stones have failed because of a certain consideration which is altogether overlooked in the ordinary tabulated data. This consideration is *the proportion subsisting between the depth or thickness of the stone and its horizontal area.* It is surely the case that the crushing of a perfectly cubical block is one thing, and the crushing of an extended slab of the same depth as the cubical block quite another thing; and this it is, so far as I perceive, that has really never been taken into serious consideration.

Now, I have taken the trouble to look into some of the tables, and try by calculation to discover some kind of relation between the experimental results, and the various dimensions of length, breadth, and width; and I am bound to say, I have utterly failed to discover any appearance of a rule. You may ask how I account for that. Very simply. I think natural stones in small cubes are not efficient for experiment; because, when they fail, it must to a certainty be owing to some accidental cleavage in the stone, or some accidental irregularity in the bed, or in the position of the stone, or what not. Therefore, I say, natural stone is not the proper material by which to discover the laws affecting dimensions. But there is one material in which it seems to me that experiments of this kind might be conducted with much more chance of success, and that is Mr. Ransome's artificial stone. This stone, as you know, is made of sand cemented by silicate of lime. It has been tried already in competition with natural stone on certain other ground, and has proved its superiority. This has been, I think, more particularly, with regard to grindstones and millstones; that is to say, nature never undertook to provide us with either grindstones or millstones, but we sought out the best natural materials we could find for the purpose; and we ultimately found that art could supply a better material than all. So also in the present case, it seems to me, that the homogeneousness of texture in this material is sufficiently perfect to justify us in supposing that if experiments were made upon it, in the question of crushing weight, they might be productive of something like regular results, from which to deduce formulæ; and I therefore suggest, whether any proposition could be made by this Institute whereby a series of experiments might be so conducted. The question of the probable result of the experiments may be thus put:—Suppose, for the sake of argument, that the strength of a piece of stone is directly as the

depth, and inversely as the area of the bed; those conditions would certainly be simple enough, and I think might be taken to place the matter tentatively upon even a favourable footing. Now, observe the result. If we take a slab of stone, such as those which in the Holborn Viaduct constitute each an entire course of one of the piers, and if we say it is five times the depth in length, and five times the depth in width; that is to say, twenty-five squares of the depth in superficial area, it is plain that if the strength were inversely as the area, the crushing weight for a cube of the given depth, that is to say, a stone one-twenty-fifth of the area of bed, would be twenty-five times more (per square inch) than the weight which would be borne by the whole stone; and I am not sure that the disproportion arising from the difference of area would not be greater still. Looking at the proposition as it stands it is somewhat startling to us. We have not been accustomed to the idea that any such vital consideration could exist as yet undetected; but I think I have made it plain that some such question does exist, and that it is one which we should do well to seek to understand.

Professor DONALDSON.—It is to be regretted that our excellent friend has not drawn up in a more formal manner the remarks he has just submitted to us, in order that we might have had an opportunity of considering and discussing them in a more regular and methodical manner than we can do at present. The truth is, that we have been apt to consider bodies with respect to the weights they with a given area or base will support, rather in relation to their height than the bed. I think it is admitted that iron, for instance, will not bear more than thirty times its diameter without yielding to flexure. It then becomes so flexible on account of its tenuity in proportion to its bed, that it is not so liable to crushing as to bending. Now, it appears to me that all the experiments have proceeded upon the condition, that they have been made upon a limited area of a foot or one or two inches; and it has been assumed, however large the area of the stone may be, that was a sufficient basis on which to make your calculation. And it has been considered that, if any defect occurs, it would be in the bedding of the stone, arising, it may be, from accidental circumstances connected with the construction, and not with the resistance of the stone itself. The presumption is that there is a continuous bed, perfectly level, an equal compression upon one part and another, and upon these conditions the calculation is made. It is almost impossible to make calculations where you have to depend upon the good or bad workmanship of the man who sets the stone. The truth is, you must go upon certain fixed data—that the bed is perfectly level; that what it is put upon to try the experiments is perfectly rigid and steady, and offering a resistance, which cannot yield to the weight put upon it. No doubt, if experiments prove, that it depends upon the area rather than upon the material, the results would be very interesting to us all.

Professor KERR.—The experiments hitherto made appear to have tended to the determination of the difference between heights very much beyond the cube, and those results are tabulated and are useful; but the problem has never been attempted with regard to the question of thicknesses below the cube.

Mr. B. FERREY, Fellow.—We are indebted to Professor Kerr for bringing this subject to our notice, and for the scientific remarks he has made upon it; but it appears to me to be a subject that cannot be disposed of in the few remarks that have just been offered. It would be most useful to us if Professor Kerr would bring this matter before us in a more formal manner, so that it might be discussed in the way its importance deserves. I therefore hope he will not allow the matter to drop in this cursory manner.

Mr. JOHN P. SEDDON, Hon. Sec.—There is no doubt that an evening could be arranged for the discussion of this subject; but it appears to me that it would be desirable in the first instance to carry out the experiments which Professor Kerr has suggested. I believe we have had a committee before for

carrying out experiments in reference to the heights and cubes of stone; and the efforts of that committee might be renewed with the co-operation of Professor Kerr. I recollect that the late Mr. Charles Smith gave valuable assistance to the former committee.

Professor DONALDSON.—In Rondelet's *Art de Bâtir* there are diagrams given, in respect of which, according to the area of the bed of the stone, there must be a certain thickness varying according to the nature of the stone to insure a proper resistance to the crushing weight.

Professor KERR.—The real difficulty is to find a material capable of being experimented upon in small sizes. If, for instance, we took this material (referring to the specimens of limestone from the Jura on the table), every one of these pieces might show a different result.

The discussion on this subject having been brought to a close, the Meeting adjourned.

Royal Institute of British Architects.

At the Ordinary General Meeting, held on Monday, 17th January, 1870, E. I'Anson, V. P., in the Chair, the following Paper was read:—

ON THE HISTORY AND RESTORATION OF HOLKHAM CHURCH, NORFOLK.

By James K. Colling, Fellow.

To trace the history and vicissitudes of an ancient building, as far as can be gleaned upon stripping and laying bare its walls in the process of its restoration, must necessarily become a record of considerable interest both to the architect and the archæologist; and at the same time it forms in itself a statement of facts which we may never have again the same opportunity of examining so much in detail. With this view I have ventured to bring before you, this evening, to the best of my ability, a few remarks on Holkham Church, in the county of Norfolk, which have been compiled from notes taken during the progress of the work of restoration and partial re-building; to which I have added such historical facts as I have been able to collect.

The church stands within the park of Holkham, about half a mile from the Hall, the seat of the Right Honourable the Earl of Leicester. The Hall was commenced in the year 1734 and finished in 1765, and was designed and wholly arranged by the Earl of Leicester and the Earl of Burlington, *assisted* by William Kent—but the latter, I am assured upon good authority, was not really the architect of the building as it has generally been assumed that he was, although he probably designed a good deal of the interior finishings—Kent died in 1748, and he then appears to have been succeeded by Matthew Brettingham.* But considerable additions and improvements have been made since, by the present Earl. These were commenced in 1849 and completed in 1857, from the designs and under the superintendence of William Burn, Esq., one of the oldest and most respected Fellows of this Institute. At the same time very extensive and beautiful terrace gardens, a grand fountain, and other works were also added by W. A. Nesfield, Esq., the landscape gardener. The Hall is a work of very great merit, especially internally. The entrance hall, in the words of Gwilt "produces an effect unequalled by anything similar to it in England." An inscription over the entrance door informs us, that, "This seat on an open barren estate was planned, planted, built, decorated, and inhabited in the middle of the 18th century by Thomas Coke Earl of Leicester." The library at Holkham contains a very interesting souvenir of Sir Francis Chantry, viz.:—a brace of woodcocks beautifully sculptured by himself in statuary marble, and presented by him to the late Earl. "Upon one of his visits to Holkham, this famous sculptor, who was a keen sportsman, brought down two woodcocks at a single shot. Upon this nothing less would satisfy him, in commemoration of an exploit he so thoroughly enjoyed, than to present the woodcocks transformed to marble to his host."† Above the bas-relief is the following inscription: "Two woodcocks killed at Holkham, November, 1830, by Francis Chantrey, sculptor, at one shot, presented to Thos. Wm. Coke, Esq., 1834." Below the woodcocks is a medallion containing the head of Chantry, and

* Since reading the above, my attention has been drawn to a work published on Holkham, by Matthew Brettingham, in 1773, in which it is stated that, "The care of proportioning the parts at large, and the detail of each member of the building in particular, was committed by the Earl of Leicester to the superintendence of his own architect, Mr. Matthew Brettingham, of Norwich."

† Holkham Guide.

is thus inscribed, "This medallion of Sir Francis Chantry was added by the Earl of Leicester, 1847." The church, which is dedicated to the Saxon Saint Withburga, stands on a hill or mound of sand, near the sea coast. The hill is somewhat singular and extends but a short distance beyond the walls. It is said to have been thrown up by the Saxons, but more probably it is natural and formed one among a number of drift hills of an ancient line of sea coast. This theory is especially borne out from the fact that another hill exists in the park, at a short distance south of the church, of a similar description, which is now covered with trees; and also that another hill did evidently exist on the north side of the church, but which has been nearly all removed. The sand having been used, at various times, for building and other purposes. The floor of the church is about 90 feet above the sea level, which is a great deal considering that it is situated upon a very flat coast. The tower can be seen from a great distance both from the sea and along the coast, and for that reason it has been used as a telegraph station in time of war.

Holkham appears to have been a place of some importance in ancient times, but the village was not situated then where it is now, and probably from the reclaiming of land from the sea, which has been going on for many years past, the features of the place are now considerably altered. The present village is a mile east of the church, but the ancient village or town was to the west, and probably also around the church. The present lake, which forms a very handsome piece of water in the park, covering nearly 40 acres, and situated a little to the east of the church, was formerly an arm of the sea and probably formed the backwater of a harbour for shipping, the channel of which may still be distinctly traced across the enclosed grass marshes. It is recorded that this town with Burnham Deepdale, was appointed in the reign of Edward III. to find one ship, in order with others to transport the king's army from Dublin to Scotland. There was a market on Mondays, which is said to have been a great fish market, and that 4d. per annum were paid for fish stalls to the Lord of Wighton. There was also a fair held here on the decollation of St. John the Baptist, but both have long been obsolete. In Saxon times Holkham, which was known by the same name even at that time, belonged to Anna king of East Anglia, and it is said that he had a country seat here. Anna was a Christian king and fell in battle A.D. 654 fighting against Penda, king of Mercia, who was one of the last and the fiercest of the Saxon pagan chieftains. He had four daughters who were named Sexburga, Ethelburga, Etheldreda, and Withburga, all of whom at different times embraced the monastic life, and from the holiness of their lives, were considered as the special patronesses of East Anglia. Etheldreda who founded the monastery of Ely became the most famous. She was the first Abbess of Ely, her sister, Sexburga, being the second. Ethelburga became the Abbess of the Benedictine Nunnery at Barking in Essex—for king Anna also had a son named Erkenwald, who was made Bishop of London in 675; he founded the Abbey at Barking and made his sister Ethelburga the first Abbess. Withburga, the youngest daughter of king Anna, was born and educated at Holkham. In 650, a nunnery of Benedictines was founded at East Dereham, about 20 miles from Holkham, either by her father for her, or by herself, and she became the first Abbess. She died after living a long and holy life, and was buried there in the churchyard, but the place was destroyed by the Danes about a century afterwards. Her remains were eventually translated to Ely, and she was canonized with her sisters Etheldreda and Sexburga, with Ermenilda, the third Abbess of Ely, who was daughter of Sexburga. Richard, who was Abbot of Ely from 1100 to 1107, and who completed the eastern portion of the Cathedral, removed into it on October 17th, 1106, the bodies of these sainted Abbesses. It may not be uninteresting to notice that St. Werburgh, daughter of Ermenilda and granddaughter to Sexburga, became the fourth Abbess of Ely, and that she was buried at Hanbury in Staffordshire, but was afterwards translated to Chester, and the Cathedral there was dedicated to her, thus showing the extraordinary saintly character of the descendants of king Anna.

St. Withburga having been born at Holkham, and had there, no doubt, first made her vow to dedicate her life to God, would not forget the place of those early years and recollections. Therefore, in all probability, if her father had not previously done so, she herself would not have failed to have established a church there. It might have been a rude one, formed of wood perhaps, and probably was erected on this very hill of sand, where now, twelve centuries after stands the present church. However that may have been, a church was erected to her memory at Holkham, and the place for a time was called Withburgstowe. Now, as the present church was dedicated to her, we have every reason for supposing that that church was built upon the present site. We are told that after the irruption of the Danes in 870, when not only Dereham, but Ely, Peterborough and Crowland Abbeys were destroyed, there was no Bishop of East Anglia for more than 80 years, and till some time after 921 paganism was probably the profession of the majority in East Anglia. It might have been upon this revival of Christianity in the tenth century, when Æthelwolf was made Bishop of East Anglia, and the people were again brought back to the Christian faith, that Holkham Church, then no doubt in ruins, was rebuilt to the memory of St. Withburga. During the progress of the late works at Holkham we came upon some foundations at the west end of the church (see A in plan) which appear to have been those of a western tower. Now, as the present tower dates from early in the thirteenth century, it is not unreasonable to suppose that these foundations belonging to a tower formed part of the actual Saxon church which was erected to her memory, and when the place was called after her, Withburgstowe. The foundations would form a tower about 18 feet 6 inches square, having walls 2 feet 7 inches in thickness.

There is, however, strong evidence that a Norman church existed here before the erection of the present one, or more probably an addition to the Saxon one. This is shown by the various and rather numerous remains of Norman stonework, consisting mostly of zig-zags, billet mouldings, and cushion capitals, which have been found built up in the walls. The Norman church, however, appears to have been soon destroyed to make way for an early English one, and much of the Norman stonework was reworked and used to form the thirteenth-century structure. In the east wall of the chancel were found the remains of an early English triplet window, of simple character, which had been worked out of Norman mouldings, and other details. The stones out of which the capitals were worked for the window having a Norman billet moulding behind them, the height of the capitals or imposts being limited to the thickness of the moulding. Throughout the church there are numerous instances of stones having been worked twice. The portion inserted in the walls being of an earlier style than that exposed. This is not only the case of Norman stones being used for early English work, but also of early English details being found attached to decorated work.

What was the exact form the church of the thirteenth century assumed, and what was its extent, it is now impossible clearly to determine, but a large portion of it can be traced, the tower, which is on the south side of the church, and the western portion of the south aisle is of this date. It is of the simplest character, and probably is early in the style. The west window of the south aisle is a plain single early English lancet, and the south window of the westernmost bay, beyond the tower, is a double lancet. The aisle shows externally, on the western face, a line of gable much steeper than the present one, starting from a lower point than the present eaves; clearly showing the former existence of a much steeper roof than the present aisle roof. The same slope probably extended over both nave and aisles, and if so, at that time there could not have existed any clerestory. But there is some difficulty in following the plan of the thirteenth-century church eastward; for upon examining the wall of the aisle next the tower, it was found that it had been rebuilt at some subsequent period against that of the tower, and the south door of the aisle, which is early English, had been taken down and re-erected in a very clumsy manner. Possibly the wall and doorway were obliged to be taken down and re-erected in consequence of settlements of the foundations or from having become fractured by the weight of the

tower. Whether there was a north aisle to the church of the thirteenth century it is impossible to say—probably not, as no early English remains whatever have been found in the north aisle.

The piers of the wide arch (see plan) on the south side of the nave are undoubtedly early English; they have nook shafts with foliated capitals on the angles next the aisle, and correspond with the work in the tower. The arch carried by these piers is probably of a later date. But why this arch was built so much wider than any others in the church, or in this position, is very difficult to determine. From some cross foundations which were found (see B on plan) extending across the aisle from the arch, and again appearing on the outside of the church, it would suggest that it might have been a transept, but the position is peculiar, coming as it does within about four feet of the east wall of the tower. Some indication of a door was found in the east wall of the tower. Might not the transept, if it were one, have been connected with the tower by a small intermediate building giving access from the tower to the transept? A single transept again appears to be quite an anomaly; however, as will be seen, this wide arch has had a peculiar influence upon the plan of the church.

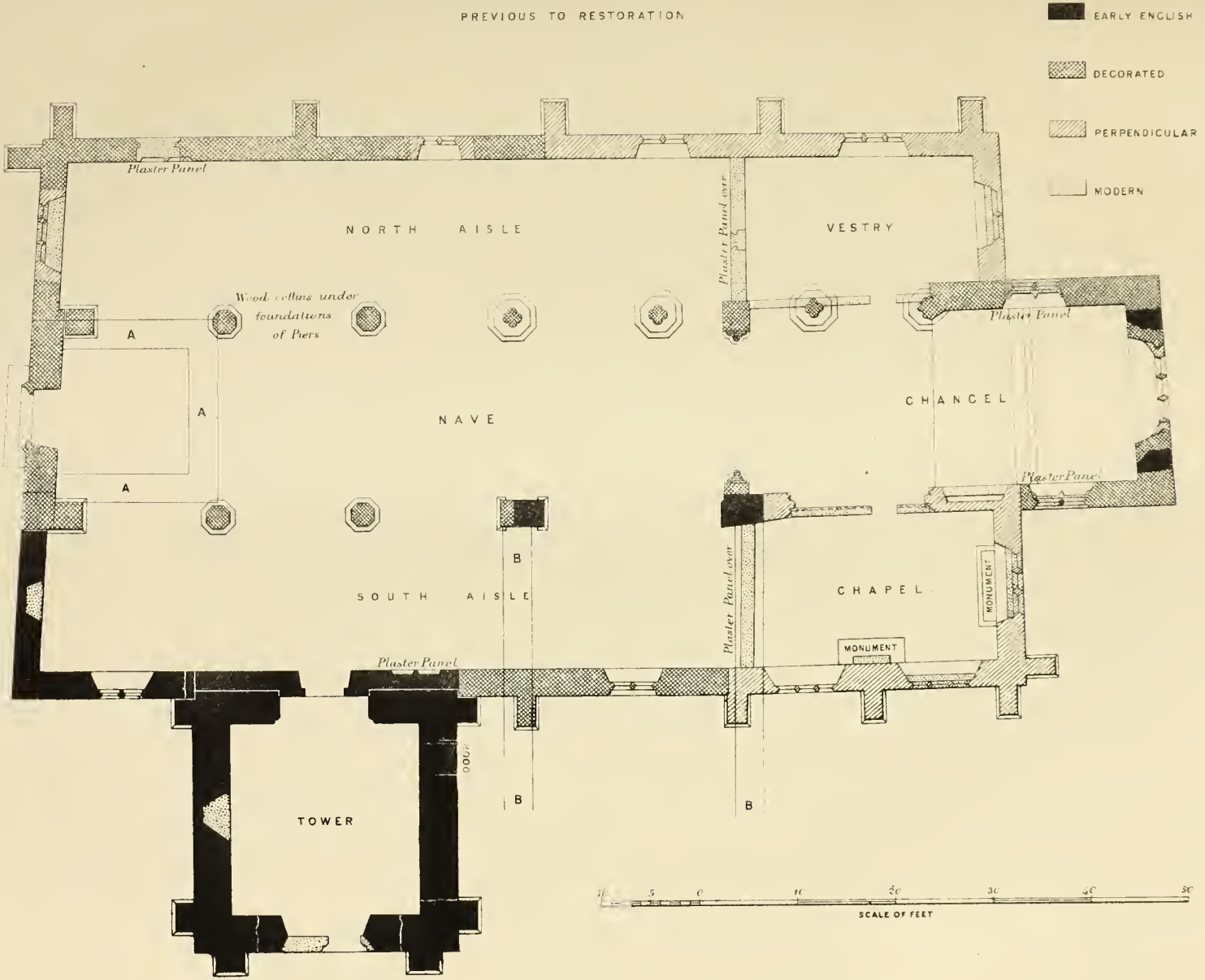
No part of the south wall eastward of the tower is early English. From this point it is decorated as far as the chancel aisle, where it ends with a straight upright joint. There was, however, an early English mutilated arch found over the decorated window of the south aisle, but it was evidently not in its original position, it appearing to have been put up in a very rough manner as a relieving arch to the inner portion of the decorated window. The mouldings were partially cut away and destroyed when the church was plastered. This window is probably worked out of early English stones—some of the early mouldings can be seen externally upon the stones of the window jamb.

As I have already noticed, portions of an early English triplet window were found in the east wall of the chancel, and a part of it appeared to be in its original position, and never to have been disturbed. If so, this shows the early English church to have been of the same length as the present. No less than the remains of three distinct windows were found in the east wall. The first, the early triplet; the second, the jamb of a window which was probably decorated, as what remained of the side windows of the chancel indicated them to have been decorated; probably, therefore, the east window was of the same date. The third window, the one existing at the commencement of the present alterations, was a very late and poor perpendicular three-light window. From the number of worked stones and mouldings found mixed up in the wall, as well as in the two side walls, and no buttresses existing at the angles, there can be no doubt of the east end having been partially taken down and re-erected several times.

The whole of the tower, as high as the sill of the belfry windows, is of the thirteenth century. The walls, which are built of rubble—as is the case with the whole of the church—were in a very fractured condition, more especially the south face. Two enormous fissures extended from the foundations to nearly up to the base of the belfry windows, which necessitated the whole south wall of the tower between the buttresses to be taken down and re-erected. Several other large fissures had to be cut out and rebuilt. The south door had been a double one, and the internal segmental arch and nook shafts remained, but in consequence of the state of the walls the doorway itself had become obliterated; one half of it having been bricked up to support the walling above, and a common doorway inserted on one side. No appearance of the original external arch existed. The west window of the tower, lighting the lower story, was a single lancet, the arch of which was gone and the rest of the window entirely blanked up. Above this western lancet there is another similar one, and in the story above are two small lancets on the south face. With the exception of the four belfry windows, these four small lancets appear to have been all the windows in the tower. The angle buttresses are flat and broad, indicating their early character and terminate below the set-off to the belfry story. The tower is of large size, measuring externally 27 feet square exclusive of the buttresses. Its height

HOLKHAM CHURCH, NORFOLK

PREVIOUS TO RESTORATION



Lithog^d for the R I B A by Kell Bro^s London E C

from the ground to the top of the battlements is 75 feet. The foundations of the tower were of the worst possible character, and amply account for the very fractured state of the walls. They commenced about 5 feet below the ground, and consisted of, first, a thin layer of earth laid upon the sand, upon which the whole church stands; upon that again thin layers (in the order named) of chalk, gravel, earth, then chalk and earth again, and lastly concrete, about a foot thick, the top of which was about a foot below the level of the ground. This spread about a foot or 18 inches beyond the walling. Upon this wretched foundation commenced the stonework, which had but one set-off, or footing, on the outside, and upon which was formed a low plinth with a wrought splayed stone 6 inches in height. In restoring the tower the old foundations were removed, and a bed of Portland cement concrete inserted at the lowest level, upon which 6 inch York landings were laid, being inserted in short lenghts and half through the wall at a time. From them the walls were carefully underpinned with brickwork and Portland cement. There is a drawing of the old and new foundations hung upon the walls. The belfry of the tower is of decorated date, and has a plain two-light window on each face without tracery. Remains were found of a horizontal string course, which had been cut away, at the springing of the arches, consisting of the ordinary roll moulding, and which continued over the windows as a label. This has been restored. The battlements and pinnacles are of perpendicular character, and have panels filled in with white flint-work, alternating with sculptured quatrefoils containing shields.

The church of the fourteenth century was an enlargement of the former church. The whole of the nave arches, as also probably the wide arch raised upon the thirteenth-century piers, and the chancel arches on the north side, are all of decorated character, although of two different dates. The north chancel arches, (see plate 2) with the two easternmost arches and piers of the nave, are of an earlier and better character, with clustered shafts, than the three western arches on each side of the nave, which have octagonal piers and plain double splays to the arches; the arches to the clustered piers having wave mouldings. The easternmost arch of the chancel is narrower than the others, and has a segmental arch only, the apex of which is much lower than the other arches. The first detached pier is set awry with the chancel and the arch above, as shewn by the strong and dotted lines upon the plan of the pier in plate 2. The moulded bases of the clustered shafts were all surrounded with a broad space in stonework, octagonal in plan (plate 2), which appears to have been originally meant for seats, although they are too low for that purpose according to the present level of the floor of the church, but probably there had been a floor at a lower level formerly. The width of the seats was 10 inches. Seats surrounding piers in this manner exist at Snettisham and Hunstanton churches in Norfolk. The last has also a stone seat against the walls of the aisles.

At a depth of 2 feet below the foundations of the two westernmost piers on the north side of the nave, were found human remains, and portions of wooden coffins, which must have been there when the piers were first erected. There were also human remains found under some of the foundations of the wall of the north aisle,—showing, I think, that the north aisle was at one time a portion of the church-yard, and that the piers and the walling were built over the old graves, when the church was enlarged.

The south window, coming nearly in the centre of the wide arch, is the only perfect decorated window remaining. It is of two lights, of the usual net tracery and of two orders of mouldings. The west doorway had been decorated, but it had been taken down and re-erected, and other later parts inserted that it was impossible to say precisely what its original character had been. The buttresses of the north aisle, from their bold proportions, had probably been decorated, but all the mouldings and the character of the set-offs had been so obliterated that it was impossible to decide with any certainty. The north door which had been built up was probably decorated, but very plain, consisting only of a hollow moulding of a quarter round form and a label which had been cut away.

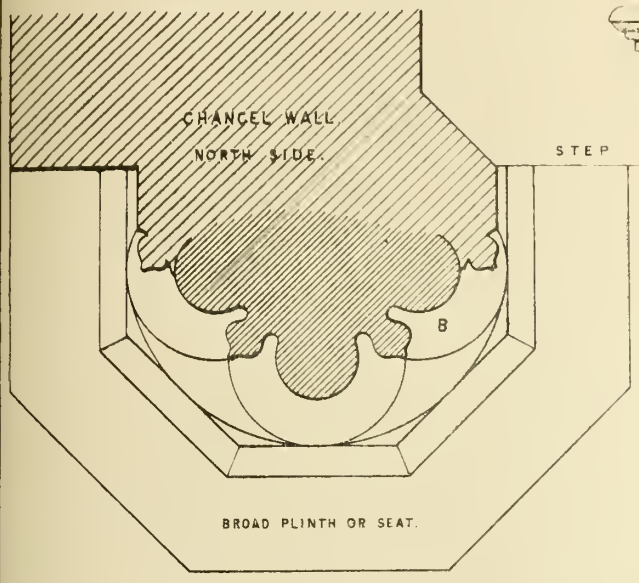
Among the more peculiar features belonging to the church, is the chancel arch, and that contains quite a history in itself, although somewhat difficult to read. It is built, as will be seen on referring to the plan, at the termination of the wide arch on the south side, which brings it on the north side exactly in the centre of a decorated arch. As far as the square piers of the chancel arch is concerned, they would appear, from some nicely stopped chamfers (plate 2), to be of the fourteenth century, yet one cannot imagine, if this be the case, why the arches on the north side were not arranged to suit it. The clustered shafting which is against the piers of the chancel arch, although evidently an imitation of decorated work, is of the fifteenth century, and there is an upright straight joint between each pier and the moulded shafts from top to bottom. The shafting also consists of exactly half a complete shaft, as if it might have been one shaft cut down the centre, and half stuck up on one side and half on the other. This upright straight joint, at the back of the shafts, runs through the bases at the bottom, and continues through the caps at the top, and has caused, from settlement of the shafting, a fracture in the arch above. Another peculiarity is, that the part of the abacus which is worked upon the square pier, is of a different sweep and radius, on plan, from that of the caps of the shafting. Looking precisely as if the arch might formerly have been supported by corbels, the mouldings of which were in one continuous curve, but that the corbels had been afterwards cut out, and the clustered perpendicular caps, bases and half shafts had been stuck up against the flat surfaces of the piers. The chancel arch, probably, is decorated, or at least of the same date as the square piers, and the fifteenth-century caps are evidently a copy of decorated work. The abacus especially is of the same form of moulding, although its radius is not the same as the portion left on the piers. The bases are clearly fifteenth-century work, no attempt having been made to make them in any way accord with the decorated bases of the other piers, as was done with the caps. The continuous upright joints between the square piers and the shafting look very extraordinary and insecure, although the shafts are probably fastened to the piers by plugs or dowels; yet it is peculiar to see stonework stuck up against a flat surface, like carpenter's work, in this manner. Now, if we consider the square piers and the chancel arch to be decorated, they could not have been erected at a very long period after the north arches of the nave and chancel were finished, and yet when they were erected no provision whatever was made for a chancel arch, as they are continuous from the nave into the chancel. There are no divisions either separating the nave aisles from the chancel aisles. (The walls shown dividing the aisles in the plan, are late erections and only about 10 feet high.) It would therefore appear, in the fourteenth-century church as if the intention at first was not to have any separation between the nave and chancel; and yet, before many years had elapsed they must have altered their minds, and have erected the present arch.

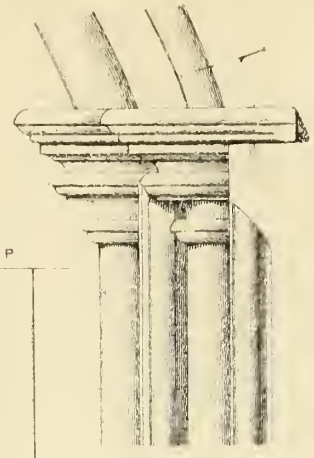
The proportions of the decorated arches of the nave and chancel are very good, the piers being 12 feet 6 inches high, about 12 feet apart, and the arches rising 9 feet. This, with rather a narrow nave, which is only 18 feet, and the clerestory above, gives a fine lofty proportion to the inside of the church, which is 42 feet from the floor to the apex of the roof. Why the easternmost arch in the chancel on the north side was made narrower than all the others, only 9 feet 3 inches wide, and segmental, it is impossible to say. There is no apparent reason for it. The north chancel wall also, eastward of the arches does not come in a line with the piers and arches, causing an awkward break in the chancel and a corresponding projection into the aisle. In the respond here there is a peculiarity from the wall shafts continuing beyond the wall stopping (plate 2). That is, the pier appearing as if it might originally have been worked as a detached one, and afterwards imbedded into the wall, or the wall built up against it and formed into a respond.

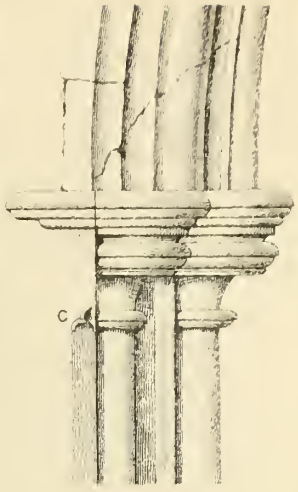
The arches at the responds at the west end, and the one abutting upon the wide arch, are carried upon plain moulded corbels. The one at the north-west finishing in a nicely carved knot. The west end of the church is not at right angles with the nave, which throws the position of all the piers out so

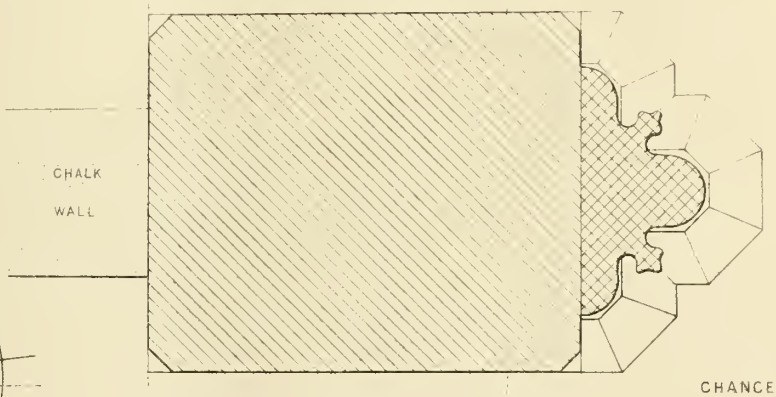
HOLKHAM CHURCH, NORFOLK.

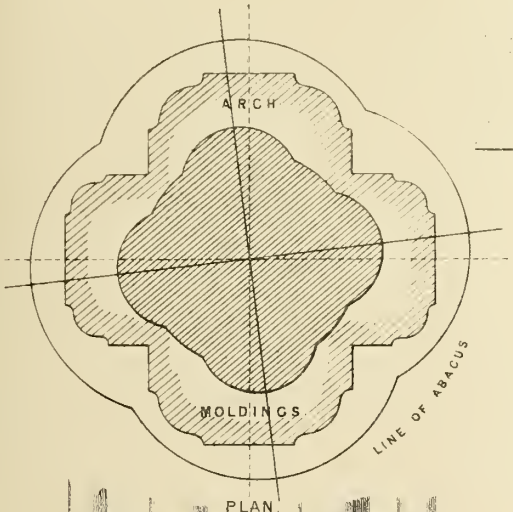
PREVIOUS TO RESTORATION

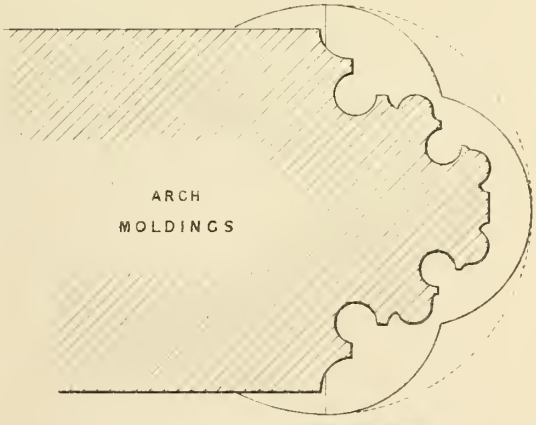


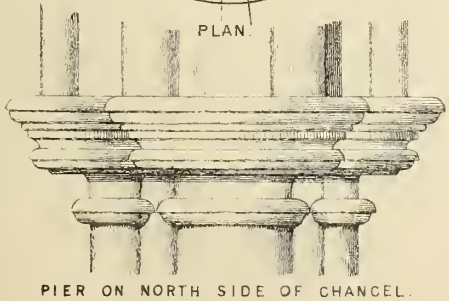


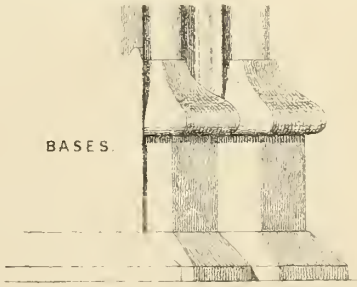












¼ IN SCALE.

JAMES K COLLING. ARCHITECT.

Lithog[d] for the R I B A by Kell Bro[s] London E C

that no two come opposite each other. In fact the church is so remarkably irregular throughout, that it would be impossible to mention every instance of the kind. Straight joints existed between the responds and the western wall, the northern respond being as much as three inches away from and clear of the wall. Transverse straight joints were again observable in the west wall near the responds. In the restoration I added external buttresses in a line with the responds, also angle buttresses to the south-west angle, the early English portion, as this angle was very much fractured, necessitating a large portion of it to be taken down.

The whole of the windows of the church, with the exception of those already mentioned (as well as the whole of the clerestory), were perpendicular, some of them being very late in date and extremely poor and common-place in character. The windows of the north aisle of the nave and chancel, were no doubt late insertions, as the fourteenth-century arcade of the nave and chancel shows that the aisle must have been completed in that style also. The late windows, therefore, of the nave aisle have been done away with and two-light decorated windows inserted in lieu of them, corresponding in character with the decorated window on the south side. On the south side of the church the chancel aisle is clearly a perpendicular addition and late in the fifteenth century. The arch communicating with the chancel corresponds with it in date. At the back of the chancel wall against the chancel arch, there at one time existed a rood staircase and the door is still in existence on the chancel side; it has a Tudor arch, and probably is of the same date as this chancel aisle.

On the south side of the chancel beyond the arch to the chapel were found the remains of some sedilia. Above the seats was a recess, arched over with a four-centered arch. The lower portion of the recess was painted in imitation of a curtain in red and black, diapered with flowers.

The original roofs of the church, as far as could be determined by the remains which were found, were of oak and of plain fifteenth-century character. The nave roof had a pitch of about forty-five degrees, and was carried by trusses with arched braces coming down upon plain oak moulded corbels. The aisle roofs were nearly flat, but some of the old timbers which were still in existence show that they were very boldly moulded.

During the progress of the restorations a very interesting series of coped tombstones or coffin covers were discovered in various positions. Some in the church-yard, others under the foundations, or buried up in the walls, but all more or less close to the tower; and I imagine them to be of the twelfth century; but it is difficult to assign to them anything like an exact date. Six of these coffin stones were found, although some were broken in several pieces, and these have been now preserved in the pavement of the west end of the church. There were also found some fragments of others, as well as a portion of one of the stone coffins. The covers all have crosses upon them of an early character, in slight relief; some of them have a second cross at the foot, while others are finished with the usual steps at the bottom. In the centre, and united to the stem of the cross, is a peculiar formed ornament shaped somewhat after the manner of a bracket. This is repeated upon all that we found, with the exception of one. Two of the coffin stones have inscriptions around them. One runs thus, and is in old Norman French:

✠ ANNEYS ⁝ DEBRVNHAM ⁝ LA ⁝ FEMME ⁝ ADAM ⁝ HAMVND—GIT ⁝ ICIDEV ⁝ DE ⁝ LALME ⁝ EY, the remainder being broken away, but probably EYT : MERCI. which may be translated "Anne of Brunham" (or Burnham, as several of the neighbouring villages have that name,) "wife of Adam Hamund lies here, God have mercy upon her soul." The inscription on the other stone is very similar, and is also to a Hamund, but the N is omitted. It runs thus:—

✠ SIMVND ⁝ HAMVD ⁝ GIT ⁝ ICI ⁝ DEV ⁝ D : : LA : : : : : : : : : : EYT ⁝ MERCI ⁝

one letter and the word "alme" being obliterated. This inscription, however, supplies what is lost in

the first. The words also " ici" and " Dieu" are written distinctly as two words, while in the first they are joined together as if all in one word. The stones are in tolerably good preservation. There is a tomb stone of a very similar description in the churchyard of the neighbouring church of Burnham Thorpe, but it is without any inscription. I consider these tombstones to be of Norman date, or very early in the thirteenth century. I would also draw your attention to a stone upon the table which was found buried up in the walls of the church, but I am unable myself to determine the date of it. At the first glance I pronounced it to be Saxon, but upon further examination, I do not think it can be.

Few churches, perhaps, have ever seen more changes and alterations than Holkham Church—from the time when a church was first erected upon the spot up to the present, a succession of alterations or additions appear, from time to time to have been going on in some form or other. After the decline of Gothic architecture the church appears to have been allowed to fall into considerable decay, for in 1767 it is recorded that the Countess Dowager of Leicester repaired the church at a cost of £1000. Blomefield in his history of Norfolk has a particular account of this reparation, which must have been written only a few years after the work was completed. He says, " in the spring of 1767 her Ladyship began to repair Holkham Church. All the outside walls and stone window frames were repaired throughout, the roof made strong and part of it new leaded, the inside of the whole stuccoed and ceiled; the floors entirely new paved, the pews and seats all new and erected in a regular form. The pulpit, desks, communion table and rails thereto all mahogany;* a marble font, plate for the communion, linen and books for all the services; the old monuments restored, the vestry room fitted up and all the windows new glazed. The whole was finished at Easter, 1768, at the sole expense of her Ladyship." Then follows some observations highly in praise of her Ladyship, and although not a very judicious one, we cannot help seeing that this was a very well-meaning restoration of the church, according to the ideas of what a church should be at that time. The arms of the Countess of Leicester were painted in the west window of the church, and underneath was this inscription. " In the years 1767 and 1768 this church and chancel were repaired and beautified at the sole expense of Margaret Baroness Clifford, Countess Dowager of Leicester." This was the same lady who finished Holkham Hall, after the death of her husband.

Among other things which were done at this time was the cutting away of the lower portion of the curved ribs of the old roof to make room for the new coved plaster ceiling, which extended throughout the nave, aisles and chancel, and was hung up to, and supported by, the ancient roofs. The date 1767 was found cut upon one of the timbers of the old roof, which was the date of the new ceiling.

In 1785 the church was again repaired as recorded on a stone inserted in the western wall over the west entrance. It runs thus—" This church and steeple were new roofed, slated, stuccoed and glazed at the sole expense of Thomas William Coke, Esq., Anno domini, 1785." The new roofs referred to here consisted of deal rafters being laid entirely over the old roofs below and the whole covered with slate, so that although carrying a ceiling inside and a new covering outside, the old mutilated roofs had still to carry the weight of the whole, and which they did up to the time when they had to be removed for the present restorations.

A description of the church immediately before the commencement of the present works will show to what a state the church had been brought by the stuccoing and other work. The walls, which consist of the usual Norfolk rubble work with dressed stone quoins, had not only been covered up externally by plaster or stuccoing; but all projections, such as string courses, many of the label mouldings to the windows, and the nosings to the water tables of the buttresses, had been cut off and plastered over. The walls, which are built without plinths, had half-brick plinths added to them in white bricks, and brick

* This is a slight error, as the material was oak.

battlements continued throughout the church, to aisles, clerestory, chancel and also gables. But a great peculiarity was that every slope or set-off of the buttresses of both church and tower, as well as the whole of the battlements, were covered up with roofing slates fastened on with irons and run with lead. The whole external surface of the walling, as also the side windows of the chancel, the east and west windows of the north and south aisles, the west window of the tower, as well as the easternmost side window of the south aisle and the north door, were all covered up and plastered over in this manner with a thick coating of plastering. In many cases more than one coat, covering up everything in one plain even surface, jointed in imitation of stone, from the brick battlements at top to the brick plinth at the bottom. In the tower, even the flint panelled battlements, of fifteenth century date, were all covered up with the uniform coating of plaster, with the exception of the sunk quatrefoil panels, which alone were allowed to show themselves. Much of this stucco coating had fallen off, or was loose in many places, especially on the stone quoins of the buttresses, doors and windows, which gave very little key to the plaster. At the jambs of the windows and doors, as well as to the cills of the windows the plaster had to be worked down to a very thin coat, as of course there was nothing whatever to stop the edge of the plaster against. This no doubt was one great cause of its failure, and this difficulty might possibly have been the reason for their stopping up all the doors and windows which they thought they could spare.

Internally, besides the coved plaster ceilings, the walls and arches were covered up with plastering and whitewash, with a great deal of lath and plaster to carry out the ideas of the architect—for there was an architect for these alterations, no less a person than the celebrated James Wyatt, architect of Fonthill Abbey, and who also did so much to *beautify* Salisbury Cathedral. On the walls were several imitations of blank windows with Gothic tracery in the head, all carefully wrought in plaster and evidently copied in a very indifferent manner, from the two-light decorated window in the south aisle. One of these panels was placed between the present window and the south door, another nearly over the blocked-up north door—part of the stone door head having been cut away to make room for the plaster panel. Two others were at the east end of the north and south aisles, which were completely cut off from the eastern portions or chancel aisles by lath and plaster deal stud partitions, and ornamented with repetitions of the Gothic plaster panels or blank windows. These partitions stood on low walls, which on the north side was a 14 inch chalk wall about 10 feet high, in the centre of which was found, under the plastering, a small door blocked up, which was of the fifteenth century, or perhaps, as late as the sixteenth century, with some remains of colour upon it and the wall appeared to be of the same date. On the other side, the south, the partition stood on a 14 inch red brick wall, about the same height as the chalk wall on the north side. The arches on the north and south sides of the chancel were cut off in like manner with low brick walls. These were probably introduced in 1767, when it is said the vestry, "was fitted up," as the north side has been always used as the vestry. There is a curious circumstance connected with the low chalk wall on the north side—in building it, not even the plastering upon the walls at each end was disturbed, and when the wall was removed, the plastering against which it abutted was as perfect, or perhaps more so, than any other part, and on the plastering at one end, thus exposed by the removal of the wall, a rude painting or drawing was found, of which I have preserved a sketch. There are several instances of these straight joints in different parts of the church, some of which I have already noticed, showing that whenever any addition was carried out no attempt was made to bond the old work to the new, but a perfectly straight upright joint was left, so that it could be easily seen where the work of later date was added on to the earlier. The church had also an enormously heavy west gallery, containing a small organ shutting out the west window. The front of the gallery was formed of oak panelling with a heavy cornice supported on oak Roman Doric columns. In the centre of the

nave, was an extraordinarily high pulpit in the same style, with reading desk and clerk's desk, descending from the same in regular order. The chancel was decorated with a heavy classical altar screen, in oak, with Corinthian pilasters and centre pediment. The seating consisted of the usual high square box pews, with some ordinary benches for the poor. The font which was placed in the south chancel aisle, was of a shallow basin form, supported on some sort of classic baluster. No doubt these were the fittings referred to by Blomefield.

The tower, as I mentioned at the commencement of my paper, was used for telegraphing in time of war, the belfry being fitted up as a comfortable living-room. The bells, which were sold by faculty in 1784, with the exception of one, which was removed to the floor below, where for the want of proper outlets for its sound, it could scarcely be heard when rung. It measured 3 feet 6 inches across the mouth and had the date upon it of 1608, with " John Draper me fecit." The walls of the belfry were plastered, with a plaster-groined ceiling, and sashes in the windows. It was reached by a convenient wooden staircase, and another led from the belfry or living-room to the top of the tower. It was, however, a mystery to know what the occupants did for a fire; but upon searching in the bottom story of the tower, a fire-place was discovered dug out of the lower part of the tower, the western lancet had been evidently turned into a flue, and the head of the window had served as an exit for the smoke. The lintel of the fire-place was formed by one of the early coffin stones, the plain face or underside being turned outwards. Upon stripping and cleaning the walls from whitewash and plaster, evident traces of the action of fire were found throughout the whole interior of the tower; one or two stones showing the effect of the fire upon them are laid upon the table. Thus the tower had not only been used as a dwelling place, but the interior had been completely burnt out at some time or other. From the fact that no charred parts were found upon any of the timbers, I conclude that they were all destroyed, and that it was necessary to completely renew them after the fire.

The present restorations, which have been carried out at a cost of about £9,000, at the sole expense of the Right Honourable the Earl of Leicester, consist necessarily of a partial rebuilding as well as restoration, and the necessity of supplying many features that have been lost or obliterated, but which no doubt the church originally possessed. The whole of the east end, a large portion of the tower as well as the double door, besides many other minor parts, had to be supplied and rebuilt. The additions to the tower have been made in the same style as the tower, the thirteenth century, and consist of the double doorway, a new doorway entering the church from the tower, a new ringing floor, and an arcaded stone staircase leading up to it. In the church the architecture of the fourteenth century (with the exception of the early English portion of the south aisle) has been adopted, as the church was principally of that date. The late windows, therefore, being evidently insertions, were done away with and decorated ones substituted, with the exception of those in the north and south chancel aisles, which have been retained as later additions to the church. The south chancel aisle being clearly entirely a late addition.

The one decorated south window was therefore carefully preserved and taken as the type to be followed for the whole of the others. The east window is made of five lights and the west of three lights, with a new decorated west door below. The whole of the plaster, both inside and out, has been removed and the stonework renewed or restored as was found necessary, but retaining the old wherever it was possible to do so. The rubble walling and flint work have been restored and pointed with grey mortar. The whole of the clerestory windows are new two-light decorated windows with the nave cornice in stone in lieu of brick battlements. The aisles also have been restored with stone parapets containing flint panelling. The roofs of the nave and chancel are of pitch pine, with curved braces, and carved bosses at their intersections with the purlins and ridge. They are covered with grey Staffordshire tiles. The aisle roofs are of a flat pitch, with half trusses having curved braces and open

tracery in the spandrils. They are covered with lead. The chancel aisles are separated from the nave aisles as well as from the chancel by oak carved and pierced screens, the organ being combined with that in the south chancel arch. Many of the full-size details of these screens are upon the walls. The seating, which is all open, is of oak with carved backs and bench ends, with arm rests. The plain surface of the seat ends being panelled and enriched with carved foliage, arranged from nature, but treated conventionally, every panel throughout the seating being different. The reading desk is of a similar character to the seating, with wheat and tares on one side and barley and vetches on the other, with also an admixture of flowers, such as the poppy and corn cockle, with harvest mice. The pulpit is of Caen stone, with carved panels, containing the oak, ivy, maple and hawthorn, the upper part having polished red granite shafts at the angles, and is supported on a cluster of granite shafts with boldly-sculptured capitals. The font, which is placed in the centre of the nave at the west end, is also of Caen stone, with the emblems of the four Evangelists alternating with foliated panels upon the sides of the basin, supported on nine red polished granite shafts. The reredos consists of an arcade with red granite shafts and carved capitals and foliated spandrils. The flooring is laid with Maw's tiles. The altar space is of richer character, and has an admixture of black and white marble. This portion was arranged and executed by Messrs. Simpson and Son, of West Strand. The east and west windows are filled with decorated Grisaille glass, in geometrical pattern, by Messrs. Lavers, Barraud and Westlake. The remainder of the glass arranged with simple stamped quarries or borders, with early Grisaille glass in the early English windows has been executed by Messrs. Powell and Son. The general builder for the whole, who has done also the stone and wood carving, is Mr. Robinson Cornish of North Walsham, and I have great pleasure in expressing my warmest thanks to that gentleman for the excellent manner in which he has carried out the work. A peal of six bells, with provision for eight, has been cast and put up in the tower by Messrs. Warner and Sons, the tenor of which weighs about 20 cwt.

As to the further nature of the restoration, you will be best able to judge for yourselves from the drawings which are hung upon the walls. In conclusion, allow me to say, that if I have gone into some portions of the subject too minutely, and have troubled you with many small details, which are perhaps not of such importance as they appeared to me, I hope you will pardon me, and put it down to my anxiety to produce an accurate account of the history and restoration of Holkham Church.

Mr. M. E. Hadfield, Fellow.—I rise with great pleasure, being accidentally in London, to propose that the thanks of the meeting be given to Mr. Colling for the very minute, careful, and exhaustive way in which he has treated the subject he has favoured us with. Knowing something as I do about the restoration of old churches, the history which we have heard this evening appears to be one which we have heard over and over again—indeed every time we are called upon to do anything to our old churches. We have first the Saxon church, then we have the Norman, then the early English additions, then the floral decorative period, after that the perpendicular period, and then we have those works of the Georgian era, of which the less is said the better. I gather from the able manner in which Mr. Colling has treated the subject, that this must be a very interesting church, and the way in which it has gradually grown up from its early beginning is very obvious. At this late hour of the evening, I will not enter into any discussion, but I feel very grateful to Mr. Colling for his paper, and I am sure those present will join me in thanking him for it. I ought to say a word with regard to the elaborate and beautiful designs and wood carvings which are exhibited. Those who know Mr. Colling, are aware that he stands very

high in the art of decorative designing, and what we have heard and seen to-night is just what we might expect from Mr. Colling's master-hand. I beg, in conclusion, to move a vote of thanks to that gentleman for his very able paper.

Mr. JOHN P. SEDDON, Hon. Sec.—I beg to second the motion with great cordiality, and to express my high admiration of the beautiful and elaborate work which has been exhibited. I do not gather whether the whole of the screens mentioned are new or whether they are a restoration.

Mr. COLLING.—They are entirely new: the positions of the screens were formerly occupied by walls, those walls have been removed, and the open work screens put in their place.

Mr. SEDDON.—Norfolk is famed for its beautiful screens, and Mr. Colling has added another to them.

The CHAIRMAN.—If no gentleman has any other observations to make, I will put the motion that the best thanks be given to Mr. Colling for what has been very properly termed a most able and exhaustive paper. It affords another instance of the loving affection with which our old churches and buildings are regarded. This restoration has been effected by one individual at a considerable outlay, and is altogether a really interesting work, and it is quite evident that great care and attention have been devoted by the architect to the restoration as now presented to us. If there is no other merit of the Georgian age, it certainly has the merit of giving us a good crop of work in undoing the misdeeds of that period.

The vote of thanks to Mr. Colling was passed unanimously, and the meeting then adjourned.

Royal Institute of British Architects.

At the Ordinary General Meeting, held on Monday, the 31st of January, 1870, E. I'Anson, Vice-President, in the Chair, the following paper was read:—

ON THE ORNAMENTAL FEATURES OF ARABIC ARCHITECTURE IN EGYPT AND SYRIA.

By John D. Crace, Contributing Visitor.

Last year, from the necessity of avoiding an English winter, I found myself in what always seemed to me an enchanted city—Cairo. A "convalescent," and therefore for the time an idle man, I found in its picturesque streets, its ever-moving colour, its variety of Eastern costume, its primitive manufactures; but above all, in the remains of its noble and graceful buildings, an endless field for amusement and for study.

A subsequent ride through Palestine and Syria was a good sequel to this sojourn in Egypt; and afforded an opportunity of extending my notes on Arabic buildings, and comparing their local peculiarities. I propose to lay before you, as simply as I can, some of these notes.

In a paper necessarily short it would not be possible to attempt an historical analysis of Arabian art. That it was a vigorous and beautiful outgrowth of more than one decadent and debased style is as true as it is remarkable. To trace the exact part or share which Persian, Greek or Copt each had in its development would be a difficult task. For this evening it will suffice for us to note the fact that among an energetic, conquering race, having *no art of their own*, but having an intense vigour of character and existence, a style of art sprung up which quickly ripened into individuality. And although, probably for a considerable period, every artist or skilled workman employed was an alien having his own art traditions, yet their varied workmanship and art seem to have been adapted and appropriated to one result, and that result a style as remarkable perhaps as any in the civilized world, not only for consistency and beauty, but for originality. For, whilst, no doubt, each separate feature might be traced to some parent source, the whole possesses a unity and completeness, in its best examples, unsurpassed in any other style.

I propose to call your attention more especially to the various *ornamental features* of the Arabic architecture of Egypt and Syria. But in order to do this explicitly, it will be necessary for me to touch to some extent also on some pecularities of construction; and to point out some of the special features and stepping stones of its development and growth.

It may be broadly stated that Arab architecture commenced *as a distinct style* about the middle of the ninth century, a little more than two hundred and fifty years after Mohammed's "flight," or about seventy years after the famous Haroun e' Rasheed of the Arabian Nights.

The earliest Arab monuments in Egypt upon any records of which reliance can be placed, are the "*Nilometer*," first completed A.D. 861, but altered and added to A.D. 872 by "Ibn Tooloon;" and the *Tooloon Mosque*, built A.D. 876. As is well known to most of you, both these buildings possess pointed arches, which are often quoted as the earliest known examples in systematic use. In addition to this, however, both present many features which continued throughout the best periods of the style. It may be as well here to note that the *Tooloon Mosque* is entirely built of burnt brick "*stuccoed*" to resemble

stone; the *ornament*, which is of a bold and artistic character, being *cut* in the stucco by hand—not cast. In both this and the Nilometer the inscriptions are in the "*Kufic*" character, which bears the same relation to modern Arabic writing that our old black-letter does to our modern type.*

From the foundation of the Tooloon Mosque about a century elapses before we arrive at another distinct landmark in Arab architecture. This is the Mosque of "El Hákim" (the founder of the Druzes). This mosque was founded A.D. 1003, and has much of the same character as that last mentioned. The writing here is also Kufic and, intermixed with excellent scroll ornament, forms an admirable frieze. The open parapets here, of simple geometric pattern, are worth attention. (Figs. 1—2).

The examples which I have, so far, quoted, whilst possessing a distinct Arabic character, show almost as wide a difference from the subsequent Arabic monuments as our own "Norman" work does from the English work of the succeeding century. A certain massive, heavy appearance distinguishes them; nor was there as yet, apparently, any extensive use of the variegated materials which become so conspicuous a feature in the exterior of most of the later buildings.

I may here notice one very interesting monument of Cairo. Close to the "Morostan," and opening to the Kalaoon Mosque—in one of the most picturesque streets of Cairo—a very beautiful pointed doorway arrests the attention. Most people are struck with it; but the architect most so, for he at once recognises the familiar mouldings and grouped shafts of the early pointed architecture of Northern Europe. Its history is curious and very interesting. In the year A.D. 1291 Akka was taken by the Sultan Khaleel, the son of El Munsoor Kalaoon, the founder of the Morostan. Gibbon says of Akka (which was, for some years previous to the siege, the Metropolis of the Latin Christians): "It was adorned with strong and stately buildings, aqueducts," &c.; and that, after its capture, "By the command of the Sultan (Khaleel), the churches and fortifications of the Latin cities were demolished." He there found this beautiful doorway, the work of Crusaders, and removed it to Cairo, where it adorns the mosque which bears his father's name. The Arab historian "El Makreezee" speaks enthusiastically of its beauty. I mention this doorway because it is *earlier* than any of the more elaborate Arabic buildings of Cairo; and evidently excited considerable admiration in the Arab mind. An Arabic inscription on the lintel gives the date of its erection as 698 A.H. (or A.D. 1299). The Kalaoon Mosque was founded A.D. 1286, and completed A.D. 1305.

The Mosque of Sultan Hassan dates from about A.D. 1354, and is probably the most important of the mosques of Cairo. In it we see the details of Arabic ornament wrought to their greatest perfection. It would be impossible to find, for instance, a more exquisite specimen of writing, treated ornamentally, than the frieze of the great court and alcoves. The scroll interwoven with the Kufic writing is admirable. One door in this mosque is plated, as usual, with bronze in geometric patterns, but has raised bosses, exquisitely inlaid with the most delicate niello ornament in silver.

The noble recess of the main entrance of the Mosque of Sultan Hussan is a well-known feature; and its details of inlaid coloured stones, sculptured and interlaced patterns, are among the most perfect examples of Arabian art. The style has here attained its full development; combining the most perfect and highly finished details with the noble severity of the lofty walls, upwards of 100 feet high.

We have now arrived at the middle of the fourteenth century. (The period of Yussuf's Alhambra). We may turn to the beautiful group of domes and mosques known as the "Tombs of the Caliphs," about two miles out of the City of Cairo. We there find the grand sepulchral *Mosque of "Barkook,"*

* The modern Arabic character was not used at all till the middle of the tenth century. Even then the "Kufic" only was used on buildings till the end of the "Fatemite" dynasty, about A.D. 1170. After that the Arabic and Kufic were *both* employed. Even as late as our fifteenth century, single inscriptions are occasionally written in both characters side by side.

a most worthy example for study. This dates from the close of the fourteenth century. ("Barkook e' Zahir" died 1399, A.D.) For breadth of mass and effect, good proportion, picturesque parts and judicious detail there are few better examples. Here (as in most of the same group of buildings) we find the use of striped courses of dark and white stone.

The Mosque of "*El Moäiud*" in the city, with its spacious open cloister and well proportioned arcades, follows a few years later, about A.D. 1415; and in its ceilings and cornices we find an elaborate specimen of coloured decoration; much of the colouring being nearly confined to black, white and gold, with but a small relief of blue and red. Its masonry, both interior and exterior, is of red and white courses; the columns (being, as in very many of the Cairo mosques, borrowed from more ancient buildings) are of red porphyry.

Then, at the close of the fifteenth century, we have the Mosque of "El Kaitbai," who was buried here A.D. 1496; (when the Moors had already been driven from Granada). This is another of the groups known as the "Tombs of the Caliphs," and at once the most perfect and the most picturesque. It would probably be difficult to find in any country, or in any style, a more charming group of building than this mosque, with its high, graceful minaret, and its delicately sculptured dome, standing out from the pale desert against the rocky distance. The minaret may, I think, be considered the *most* elegant of all the Cairo minarets. The detail and interior decoration of the building are worthy of its general aspect. I shall presently refer to them again. With a view to making more clear the relative ages of the buildings I have mentioned, I have prepared a table showing their dates, side by side with those of the Alhambra.

The Dates of the Arabic Buildings of Cairo, compared with the Alhambra.

Date.	Cairo.	Alhambra.
A.D. 876	Mosque of Ibn Tooloon.	
1003	Mosque of El Hakim.	
1272		Death of Ibnu-l'Ahmar at Kasr-l'Hamra. The first Moorish King who resided there.
(1291	(The Gothic portal removed from Akka—re-erected 1299).	
1286 to 1305	"Morostan," and the "Mosque of Kalaoon.	
1302		Death of Mohammed II., who had continued the building.
1310		Mohammed III. erected the "Meejid-al-jami," described as having "Mosaics and delicate tracery."
1333 to 1353		Yussuf built and decorated the Courts of "the Fishpond" and "Ambassadors," the "Hall of the two Sisters," the Bânos, and the "Madrisah." (A.D. 1349).
1354	"Mosque of Sultan Hassan."	
1395	"Mosque of Sultan Barkook."	
1420	"Mosque of El Moäiud."	
1492		"Boabdil" surrendered Granada.
1496	"Mosque of Kaitbai."	

My object in enumerating the buildings I have quoted is to afford the opportunity of tracing the development of Arabic architecture by means of distinct and important landmarks. The list might be largely increased, and the intervals shortened, but without any very useful result.

It is now my purpose to consider the various details of Arabic buildings, without reference to date except where special notice is called for. It is, however, first desirable that I should set before you a few of the leading types of the structures themselves. They may be classed as follows: "Mosques," "Sebeels," "Gates," "Khans," and "Dwellings."

The mosques vary much in plan, according to the special conditions of their situation. The original form is an open court, surrounded by a covered, arched cloister of one or more aisles; the number of aisles being usually larger on one side than on the others, as two, three, or even five. Under the widest covered part is the "Mehráb" or sacred recess towards Mecca, and the high pulpit ("mimbar"). The decoration is also usually richer in this part. A fountain, or large covered cistern of water for ablution usually occupies the centre of the open enclosure. This type is taken from the first mosque at Mecca, and examples of it are found in the grand mosques of Damascus and Hebron; and at Cairo, in the mosques of "Amr," "Tooloon," "El Hakim," "El Moäiud." But some of these, as notably that of Damascus, have the sanctuary altogether enclosed. The second type has an open-court, having a centre fountain, with one or more large arched recesses or alcoves opening to it. Such is the Mosque of Sultan Hassan. Under the third head may be classed the mosques which are either altogether enclosed and roofed over (of every variety of plan) or are only partially open to the air. A fourth group may include the "Kubbets," or square, domed structures, which exist in considerable number near Cairo, and have been, in fact, mausolea. Some of these are beautifully and richly ornamented.

The "Sebeels," or drinking fountains, are very numerous in Cairo, and are among the most striking of its buildings. They are, most frequently, at the corners of streets, or in prominent places. Below is a single closed chamber, lighted by one or more large metal grilles, sometimes simple, sometimes very ornamental. Within is the water supply, with which a tube communicates, and, terminating in a small brass pipe or nozzle, allows the wayfarer to quench his thirst *by suction*, for the water is rarely allowed to run to waste.

The upper story of these buildings is almost always a school. They have usually been built as an act of charity by some person whose name they afterwards bear. "And thus," say the Arabs, "the thirsty man remembers gratefully the name of the founder; as also does the youth who is trained (and caned) in his school."

There is generally a wide eave, or verandah, of wood projecting some feet from the wall to give additional shade to those who choose to rest by the way. Sometimes the Sebeel is included in the same endowment as a mosque; in which case it forms a portion of the same building. The interior roofs are often richly panelled and decorated elaborately with colour and gilding.

The "Gates" have always in the East been treated as important, not only for defence but for ceremony; as might, therefore, be expected some of them are works of considerable grandeur. Such are the Bab e' Nasr and the Bab Zoweyleh of Cairo. Or, again, the Damascus Gate of Jerusalem. I may here note one curious feature of almost all the Saracenic gates of *Syrian* towns. The thoroughfare is never *direct*, but usually takes a rectangular turn. This does not apply, however, to the Cairo gates.

Their ornamental details do not call for separate notice at present.

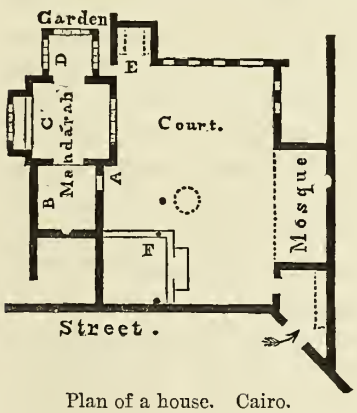
The "Khans" consist, usually, of an open court, surrounded by small chambers or recesses, and have generally also an upper story. In the country, or by the roadside, they afford shelter and security for man and beast; and are invariably built near a good water supply. Usually they have been erected by private means, as acts of charity, and frequently bear the name of the founder. In the large cities

the khan is sometimes a sort of inn, but most frequently is a depôt for merchandise ; each being set aside for a speciality. They have frequently very handsome doorways. I exhibit sketches of two of these at Cairo. Round the open or enclosed court is an arcade, or series of recesses, to be used as shops, with a stone divan running in front of them. A wide eave or awning affords shade if the court be open. The famous khan of Assad Pascha at Damascus is entirely roofed in by domes, and has a fountain in the centre; a gallery runs round it: and doors open from this, as well as on the ground, into a series of apartments which are let as shops or offices.

The residences, or private houses of Cairo are of every variety of general plan ; most, but not all, of the better class having an open court, into which the reception rooms open. The other rooms are built with a special regard to privacy. The rooms of the hárem are generally on the first floor, and some of these are very handsome. I shall perhaps best explain myself by describing to you one or two of those Cairo houses (built when Arabian art still flourished), which I have visited.

I will take first that of Ibn e' Sadád, the head of one of the oldest Arab families of Cairo, and a rich man. The visitor enters by a double gateway from the street, into a large open court. Upon his immediate right a considerable space is screened off by ornamental trellis-work. This is a private mosque, used for the devotions of our host and his household. There are chambers over this. On the left, an upper chamber, having a large window (a very exquisite specimen of the "Mushrebeeyeh"), is supported at its outer angle by a single column (E). The remainder of the court is surrounded by buildings with screened windows; but a deep, open recess, with divans and cushions, occupies the angle furthest from the entrance (F); a passage near this leads to the garden behind. The grand reception rooms occupy nearly the whole of one side, the rooms being the full height of the building. These rooms I shall endeavour to describe. In plan they are three; but, except by a step in the floor, and the arrangement of the ceilings, they practically form one large saloon, called "*Mandárah.*"

Entering a small doorway from the court at A, the first room, B, is lighted from above by an octagon lantern, or opening, in the centre of a ceiling of wood elegantly panelled by mouldings into geometrical devices, and having pendants at intervals. This ceiling is higher than those adjoining. From the ceiling downwards, the walls of this, as also of the other apartments, are lined with old *Persian glazed tiles*—blue and green on a white ground*—to within perhaps 9 or 10 feet of the floor, the total height being possibly 25 or 30 feet. The lower part of the wall is plain. At the end facing the other apartment is a niche or recess in the wall, with a small cascade, having shallow steps of marble. This first room (B) is in fact an ante-room, or the "durkäah" to the other, called the "leewan," which is entered by a low step, at which the domestics invariably take off their shoes, even when serving.



Plan of a house. Cairo.

In the opening a transverse beam, with deep trusses, or brackets, which terminate in corbels of gilt honey-comb work, carries the roof. Similar beams divide the square of the room C from the window recesses, which have separate, lower ceilings; and from the large bay or chamber (marked D) at the further end.

The ceiling of C is very rich, and of a form common to dwellings or mosques, as I shall presently point out. Large parallel beams or girders, about 12 inches thick, and perhaps 18 inches apart, are

* I believe that until about a hundred years ago, tiles of this description were still manufactured at Damascus.

carried from side to side. These are elaborately chamfered from the ends, the centre length being rounded or octagonal on the lower face. The whole of this surface is decorated with the most elaborate ornament in gold, with grounds of blue or other colour, each beam differing from the next; the chamfering of the ends is also gilt and ornamented. The spaces between the beams are divided into small square and oblong panels, the framing of which, as well as the panels themselves, is elaborately decorated and gilt. The whole effect is rich and harmonious to the last degree. The ceiling of the bay (D) is of the same kind; and this portion of the saloon and the two recesses (in C) are fitted with deep divans. Low windows divided by mullions are behind them.

In dining with the master of the house, I observed that whilst we dined in the centre saloon, the household servants (as well as stray objects of charity) took their meal in the first ante-room, within our view. We afterwards retired to the further bay (D) for the post-prandial chibouque.

The house adjoining the one just described is at present occupied by Haleel Pasha, who kindly allowed me to see a splendid room on the first floor, the "Kàah," a part of the harem. This, in addition to having very beautiful ornamental, coloured ceilings, was lined to a height of 10 or 12 feet by marble, arranged in upright panels, divided by inlaid margins of elaborate design; the whole being surmounted by a broad inlaid frieze, broken at intervals by circles of coloured marble, somewhat like that of St. John Lateran, at Rome. On one side a cascade fountain is recessed in the marble wall, and the water from this flows through a narrow channel into a small circular basin in the floor, curiously carved with entwined serpents. From this it is again carried to the basin of a fountain in the centre of the floor, the floor itself being paved with inlaid marble.

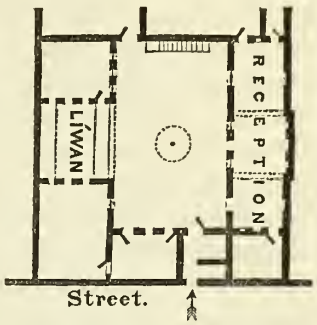
The next house at Cairo which I shall describe is in a very neglected and ruinous state. It is known as the house of the Chief Mufti, or head magistrate, and seems to have been intended for reception only. It is a very interesting specimen of Arab domestic architecture. In general plan this resembles the reception rooms or "Mandàrah" already described, the ceilings being of the same description. They are, however, very much smaller. Below the ceiling beams is a wide cove, which is painted in panels, with conventional groups of flowers on grounds alternately blue and reddish-brown. Below this the wall surface, for a height of two or three feet, is painted with rough landscapes of most elementary treatment, and probably of later date than the rest, under which there is a very elegant frieze of ornament incised in white marble, and filled in with black and red cement. The wall below this level is much cut up with doors, windows and wooden cupboards, all of very varied design; but the intervals between them are lined with blue and white Persian tiles. The cascades again occur here, and are richly ornamented with gilding and inlaid pearl. The upper windows are filled with beautiful stained glass, in the Persian manner; that is, in a setting of deeply cut plaster or cement. The floor, with its centre shaped fountain basin ("faskeeyeh"), is an admirable specimen of inlaid marble.

Having briefly described specimens of the interiors of old Arab houses of Cairo, I may now turn your attention to those of Damascus, which, possessing some features in common, have also wide differences from them. The large houses of Damascus have invariably a spacious open court, paved with marble, in the centre of which is a fountain. This fountain varies in form and size. In some houses it forms a large, oblong pool, of perhaps 15 or 20 feet in length. In others, it is a circular or octagon basin, in either case the sides are raised about two feet or more from the ground; these sides being usually of marble, inlaid more or less elaborately.

On at least one side, sometimes on three sides, of the Court, is a wide arched opening in the wall, extending to the height of two stories, forming a large recess, or open apartment, with the floor raised above the level of the court. These (called "leewan") are fitted with divans, and are carpeted and very handsomely decorated in many cases. They are, in fact, the places of reception. On either side of the

recess is generally a door leading to enclosed apartments ; reception rooms also. The ceiling of the recess is panelled and ornamented with gilding and rich colours ; the effect of which tells admirably against the more subdued tones of the arch, when seen from the court. The face and soffit of the archivolt are, as a rule, ornamented with elegant mosaic or scroll patterns, in coloured cements, let into the stone.

The walls of the court are frequently in courses of white and black, or white and some darker colour, with an ornamentally inlaid frieze at the first floor level. The heads of the doors and windows are likewise usually treated ornamentally, the archivolt or key-stones showing, and being frequently worked into interchangeable ornament at the joints. The surface is, also, often relieved, either with mosaic or ornament in coloured cements.



Plan of a house. Damascus.

In some houses a triple chamber, such as I described at Cairo, opens on the court, arches of stone or wood dividing the centre from the wings ; the flat ceilings being panelled as already described. The doors and windows open into the court on all sides, there being no windows opening on the street, on the ground-floor. This remark applies equally to Cairo houses, when built in a street. The windows of the first floor are protected at Cairo by the beautiful "Mushrebeeyeh," and in Damascus by a more simple trellis. I should not omit to state that the court of a Damascus house has usually an open balcony or gallery on one or more sides, in communication with the upper rooms or with the roof, precisely as in continental inns ; or as, indeed, in some of the old inns of London.

There are several distinctions between the Arab domestic architecture of Egypt and that of Syria as represented at Damascus. Of the latter it may be said that it is more "Persian." Moreover, here the same general style and plan of house continues to be built to this day, although the details become very debased and corrupt. At Cairo, Arab architecture may be said to be extinct, the modern style of ornamentation being entirely derived from Europe and Turkey.

I will now proceed to describe the manner in which the various parts of Arabian buildings are ornamented, taking first the *exterior*.

The dome, which forms the prominent feature of many buildings, especially of those devoted to sacred uses, varies in form, but almost always has the pointed arch for its section. In the neighbourhood of Cairo it springs usually from a straight stilt. At Alexandria, however, and at Rosetta, it has occasionally the curve returned at the base. In Egypt, the external surface of the dome is almost always relieved or decorated. Sometimes this is by being vertically moulded. In other cases, the surface is moulded in a succession of bold chevrons ; but in many instances, both in Cairo and its neighbourhood, the ornamentation of the dome is carried to a far more elaborate extent. Intricate geometrical figures are worked over the whole surface, whilst arabesques or scrolls, carved in a lower plane, enrich the ground between. The group of buildings known as the Tombs of the Caliphs, include many splendid examples of dome decoration. A broad band or frieze, usually of writing, is carried round the base of the dome. The broad splay, or "weathering," by which the structure rises from the square to the octagon is frequently very boldly moulded, the section showing on each of the square faces. The dome is generally surmounted by a bronze turned finial, carrying the crescent. Of these ornamented domes, a very elegant little example at Jerusalem is the "Dome of Moses," so named after "El Ashraf Moosa," who is said to have built it A.D. 1249 (?) It is situated within the "Haràm" enclosure, near the "Gate of the Chain."*

* I should have taken this for a later building, and rather mistrust the date. Is it named after some other "Moosa"?

But even more characteristic than the dome, is the "*Minaret*" of the Arabian mosque. These vary much in form; and no less so in ornamentation. In plan, the octagon is perhaps the most frequent form in the minarets of Egypt; but they are also sometimes square, sometimes circular. In the earlier mosques, the minarets are shorter and more simple than in those of the fourteenth and fifteenth centuries. It is these latter which may be taken as examples of the minarets of Cairo; to this period belong the most perfect examples. Starting from the square base, they are splayed into the octagon, or circular plan. If octagon, the sides are sometimes panelled, or arcaded in the lower story. The structure is then corbelled out (usually, but not always, with the honey-comb work) sufficiently to allow of a balcony or gallery running round. The next story, of less diameter, will sometimes be panelled with mouldings geometrically arranged, or occasionally, as in one at Damascus (Jama Mállah), with bands of a differently coloured material, or with inlaid devices. Where octagon in the lower stories, the upper story is generally round, as in the beautiful minaret of Kaitbai. Some have the upper story open; the superstructure being carried by single or grouped columns. If coloured materials are used in the exterior of the rest of the building, they are generally used also in the minaret, either in bands, or ornamentally. One at Damascus is entirely ornamented with a series of bands of black and white stone, the dark courses being ornamented variously with geometric inlay. The balustrade of projecting balconies is sometimes of wood; but, in the best examples, more often of stone slabs pierced with geometrical tracery; these slabs being dropped into grooves cut in the angle posts of stone (see fig. 15, Mosque of Sultan Barkook). The minarets of Cairo are terminated variously. Many are surmounted by a terminal of the form of an inverted pear (Kaitbai); others have a sort of domical summit.

The Syrian minarets are more frequently, though by no means always, square in plan, are less elaborate in form, have fewer stories and less sculpture. They also invariably have a wooden canopy or roof projecting above the balcony, to protect the mueddin. Minarets are occasionally built in pairs, as in the mosque of "Sultan Barkook," and also as flanking towers, in the Bab Zoweyleh. In this last example one story is ornamented by the surface being moulded chevron ways, and the topmost balcony is elegantly carried out by the usual honey-comb bracketing, springing from a shaft at each angle of the octagon. Some of the *square* minarets of Syria strongly remind one of the Early Italian campaniles. The square tower is sometimes pierced with openings of two pointed lights of very Gothic appearance. One which overlooks the Haràm enclosure at Jerusalem is of this character; another at Damascus is, except in its upper story, almost a counterpart of the campanile of the "Palazzo Scaligeri" at Verona, even to the alternate courses below, and in the form and marking of the arcading above.

Arabian buildings, the minarets excepted, have rarely much exterior cornice. The Mosque of Sultan Hassan, at Cairo, has a heavier cornice than usual of bold honey-comb pattern. Interior cornices are more used, as I shall presently explain. An ornamental crenellation, or parapet, however, is frequently used. These are often shaped on the reversible principle; that is to say, the ornamental form is such as to correspond with the reversed form of the interval. I shall presently point out to what an extent this principle is carried in Arabian design.

It is in the *walls* of the larger buildings, that is to say in the treatment of the large masses, that we may perhaps find most to learn from Arabian architects. Most dignified and simple are they, preserving great breadth; yet without unsightly plainness or heaviness. It must, of course, be borne in mind that, under an eastern sun, less inequality of surface is requisite for effect than with our grey skies. The Arabian builders have admirably adjusted their wall surfaces to their climate. All their surface ornament is so subordinated as not to break up the masses, which are, usually, so arranged as to preserve the effect of height. The mosque of Sultan Hassan is a notable example of this, almost to a fault; but there is hardly one among the finer mosques which does not display this characteristic. The

upper and lower window openings are usually grouped into bays slightly recessed; a wide frieze being frequently carried through and continued between them. Korán inscriptions usually form these friezes. Alternate courses of stone, of two or more colours, are of very frequent use, both for exterior and interior. Being used horizontally their tendency is to give size and width; a tendency the excess of which is skilfully counteracted in the recessing of the windows, as already mentioned, and still more so by the high doorways. Large plain surfaces are often relieved by panels, either of sculpture in low relief, or inlaid ornament of variously coloured materials. The examples which I show are from the "Jama Mállah," at Damascus; one of them combines carving and coloured inlay. Friezes, or courses, of interchanged ornament in two colours, inlaid, are also frequently used for the decoration of the external walls. (Fig. 10).

The external doorways of the principal mosques derive immense grandeur and dignity from the bold way in which they are set within a deep recess of great height; frequently nearly the full height of the building. Fine instances of this arrangement are the world-renowned doorway of the mosque of Sultan Hassan, and those of the Moäiud and Kaitbai mosques. Although these recesses are frequently elaborately ornamented with carving, inlay, or both; care is always taken to keep all subordinate to the main form, which is further emphasized by the use of alternate light and dark stones in the archivolt, when alternate courses are used in the walls. Sometimes also richly carved and inlaid borders frame the whole recess.

The interior walls of these entrance recesses are usually richly ornamented with coloured marble, inlaid in geometric devices, and their pavements are frequently very handsome. Sometimes the arched head of the recess has honeycomb pendentives elaborately worked; and, perhaps, in no situation does that ornament tell with such legitimate effect.

The door itself is, in the case of public buildings, usually a very handsome object. The most usual decoration of those of mosques consists of plates of bronze, elaborately wrought in the geometric devices, so familiar in Arabic and Moorish work. The surface of these is often richly engraved or chased, and the panels within the geometric forms pierced or engraved with elaborate detail. Richly worked raised bosses or studs mark the centre of each repeat of the design; and the handles, usually pendant rings, are handsomely worked. The "Khan of Assad Pacha," at Damascus, presents another form of strong door. There, thin strips of iron, overlapping each other horizontally, are fixed to the wooden frame by nails, with elongated lozenge-shaped heads, so set as to touch and form a hexagonal diaper. (Fig. 9).

The external doors of private houses are much simpler. Those at Cairo are most frequently set in a pointed or segmental arch, are plain match boarded, and then ornamented in colour with a painted device or frame, which usually contains an inscription in praise of God. The opening has often some simple decoration to the arched head, such as the band of interwoven moulding, so frequently used as a border in every situation.

The doors of private houses in Damascus, however, differ much from those at Cairo. *There* the door-head is generally segmental, and the wooden door itself has an outer ornamentally cut frame, under which the planks, placed straight or diagonally, are nailed to the stronger back framing, in such a way that the nail heads form part of a geometrical pattern drawn from nail to nail. Sometimes this pattern is only scratched or marked with a pencil line.

Having described the doorways, I will now briefly allude to the window openings, in so far as their external aspect is concerned. In the mosques and "kubbet," the upper windows are usually small single openings, with pointed heads. Openings of this kind generally occur in the circular wall, or drum, immediately under the dome; whilst in the space of wall between the splays, formed by the pendentives,

they are clustered into two or three-light windows, like our simplest early English. Where the single-pointed upper windows are of a large size, they are often filled with pierced geometric tracery of stone or cement, or, occasionally, of wood. The lower windows have sometimes square, sometimes low segmental heads.

I have already alluded to the way in which the upper and lower windows are panelled together by recessing the wall. The ground floor windows of mosques or sebeels have usually a wooden frame, or architrave, with carved surface ornament, in which is a grille or trellis, more or less ornamental, of either bronze, iron or wood. Many of these consist simply of inch rods intersecting through a square boss. (Fig. 5). When this pattern is used in wood the rod is generally turned, with mouldiugs. Some of the metal grilles are wrought, or cast, in more elaborate patterns. (Fig. 4).

Other window openings have pointed heads, with light shafts in the reveals; or again, the same are double, with a light centre shaft and with their arches cusped, and these are often most elegant. Rosette and star-shaped window openings are also used; some of the former splaying outwards from a small circular opening, the cusps followed out in the splay. The example which I show contains both these forms; it is from the mosque in the Castle of Hunin, one of the most beautiful and picturesque spots in Syria. (Pl. 2).

I now come to the windows of the ordinary dwelling houses. First among these stands the beautiful "Mushrebeeyeh," to which Cairo, and the Arab quarters of other Egyptian towns, owe so much of their picturesque beauty. These are projecting bays or "oriels," of wooden lattice, of every variety of pattern and of lace-like delicacy. These lattices are most ingeniously constructed, the parts being first delicately turned, and then fitted together in a geometrical net-work. (Figs. 6—7). Some, again, are altogether simpler, being formed of flat laths, half lapped into each other, and notched, often with great ingenuity, so as to make the lattice ornamental, the openings becoming octagon or star-shaped, instead of merely square.

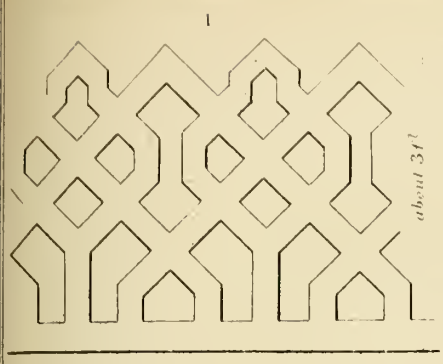
The "Mushrebeeyehs" vary greatly in size and form. The largest are usually square in plan, and are divided into four, five or six bays in their length. The lower part has enclosed panels, with some ornamental arrangement of mouldings on the surface. Above these are the trellis or lattice panels, and at the top are, not unfrequently, small squares, of coloured glass set in pierced ornament of plaster. The whole is crowned by a projecting canopy, with bratishing of wood, prettily shaped. (Fig. 11).

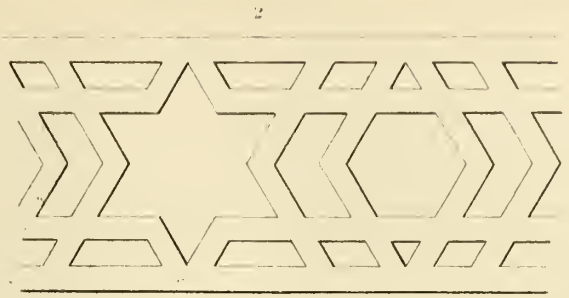
The "Mushrebeeyeh" is sometimes carried on stone corbels or wooden trusses, in which case the soffit is formed into a decorative ceiling, with geometrical pattern made by nailing on slips or mouldings. In other instances the lower part is corbelled out, as it were, by a bold cove; or again, more elegantly, by dividing the cove into a succession of octagonal pendentives; in either case being finished at the bottom by a reversed cresting or bratishing. (Pl. 3).

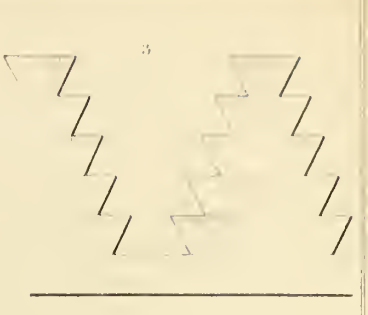
From these handsomer specimens the "Mushrebeeyeh" dwindles down to its probable prototype; the little projecting cupboard of lattice work, octagonal in plan and but just large enough to hold the family "ghoôleh" or porous jar, in which the water cools as the air passes through the surrounding trellis; for "*Mushrebeeyeh*" signifies the "*place for drink.*"

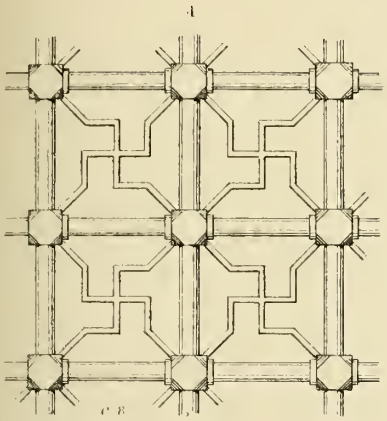
Windows of this description are to be found in Jerusalem and Southern Syria, but not frequently; nor, at Damascus, did I find any of an ornamental kind. The windows there are trellised, it is true, but the trellis work is not made ornamental; it consists simply of thin laths from half to three-quarters of an inch wide, rounded on the outer side and nailed together pretty closely, most often diagonally, so as to form a plain lozenge trellis.

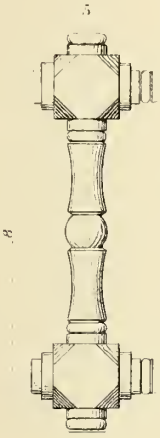
Of exterior features I have reserved till the last, the column and the arch. The former is, in the older works at least, wherever possible, borrowed capital and all from more ancient buildings, whether

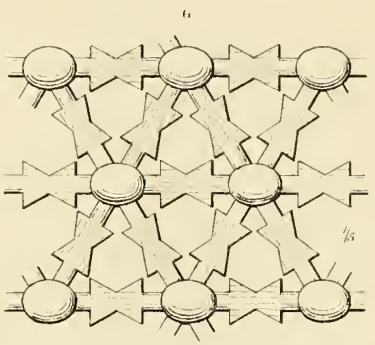


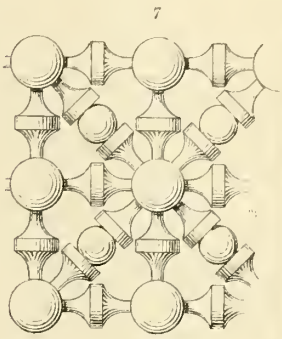


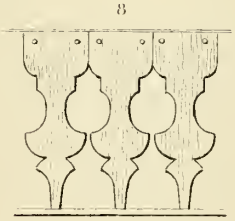


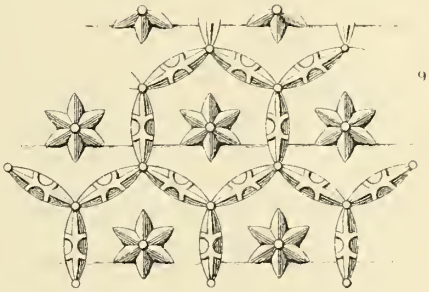


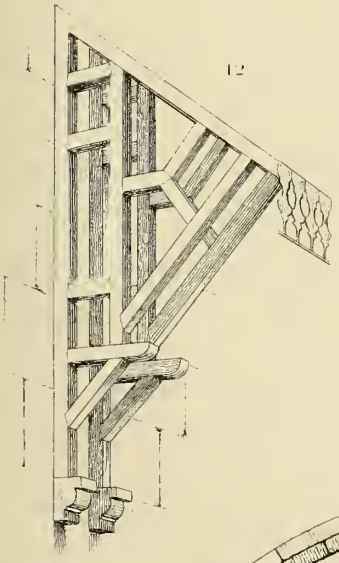


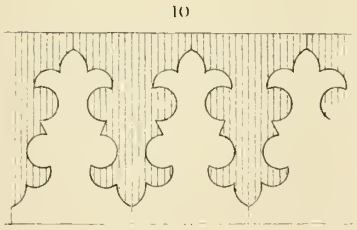


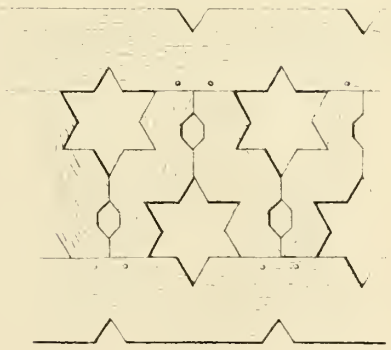


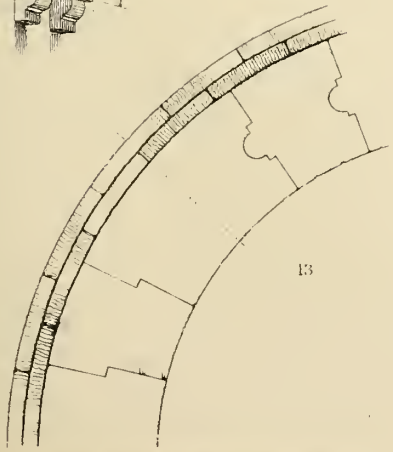


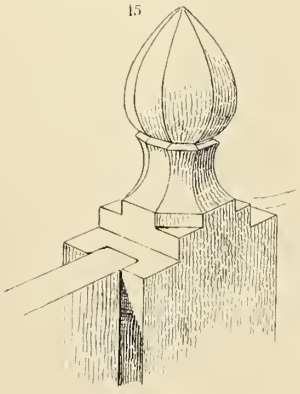


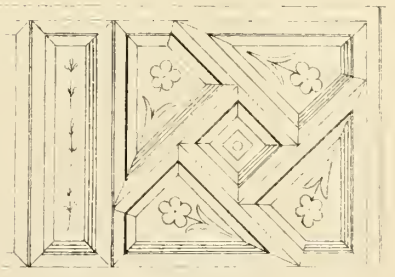












J. D. CRACE DEL.

Lithog[d] for the R I B A. by Kell Bro[s] London E C

Egyptian, Roman or Christian. As in the existing Roman basilicas, columns of odd lengths are frequently used; and the height, where defective, made up either by an impost or abacus, or by lowering the superposed structure to meet it.

One peculiar feature in connection with the column in Arabic buildings, is the almost invariable use of a *wooden cushion* between the capital and that which it carries. This is usually formed by two layers, placed in opposite directions, each consisting of from three to five pieces of wood 3 or 4 inches thick, and the necessary length. In the case of a continuous arcade, wooden tie bars extend from the centre of the cushion to the next column. Some allege that this arrangement is a provision against earthquakes. But, whatever its purpose, the practice seems to have been very general. The smaller columns, such as the shafts already spoken of as used in door or window openings, are often made very ornamental. Some terminate in a sort of ogival, bell-shaped capital, round or octagon. Others in a capital having a square abacus, from which is worked the honeycomb pattern, to meet the round or octagon of the shaft. The shaft itself is often divided in its height precisely as in Renaissance, the upper surface being twisted, and the lower portion panelled or made octagon; or even richly carved in low relief. Columns of this character are however usually of late date. But small shafts, twisted like Romanesque or Lombardic work, or ornamented throughout, are met with even in the older buildings.

The treatment of the arch is, in every style, a very distinctive feature, and this is especially the case in Arabic architecture. The forms of arch most favoured are the pointed and the segmental; the latter usually rather flat. The round horse-shoe arch of Moorish architecture is seldom met with in Egypt or Syria, although the pointed arch has frequently the slight return at the springing, which is so conspicuous in the true horse-shoe. The simple semicircular arch is however met with, as in the example of the gateway to a khan at Cairo (of which I exhibit a sketch) the ornamental treatment of which reminds one so forcibly of Norman work, than which it is much later.

In the examples of the best periods of Arabian architecture, the treatment of the stones of the archivolt, where materials of two or more colours are used, is very distinctive; and this is especially the case with the segmental arch. The stones are, in this latter form of arch, almost invariably notched or keyed together; often, with most ingenious designs, in such a way as to produce a counter-changed ornament on the face of the archivolt. This is generally made to appear constructive, although in fact, it is not always so, but is occasionally produced by a thin layer or veneer on the surface, as is shewn by an example from the "Kubbet el Fedaweeyeh," near Cairo, where the *actual* construction *is* notched in the simpler way. The system is, however, frequently truly carried out very cleverly. A niche in the Mosque of "Barkook," is a striking example of this, the stones being elaborately worked into each other on the double curve, from the face to the back of the niche. The same thing occurs in some of the great entrance recesses.

In larger arches, such as gateways; and, also, where a straight lintel is required, a plain single or double set-back or notch is used merely as an additional security in construction. And we may note, that had the great centre stone of the lintel at Baalbek been thus keyed, it could not have slipped into the critical position which it now occupies. This construction, and its ornamental treatment, is as general in Damascus, and throughout the Arab buildings of Syria, as in Egypt. Indeed, the system is, perhaps, in even *more* extended use in Damascus than in Cairo; for not only is it applied to every form of arched door or window opening, but it is used for keying together the stones composing the basins of fountains, or even the straight threshold of a doorway. In painted decorations also the idea is made use of, though often in so modified or tortured a form as not to be really practicable. For some time, I imagined this system of notching or interlocking the archivolt to be a purely Arab invention. It may, however, I think, be shown that the Arabs derived this peculiarity from the same

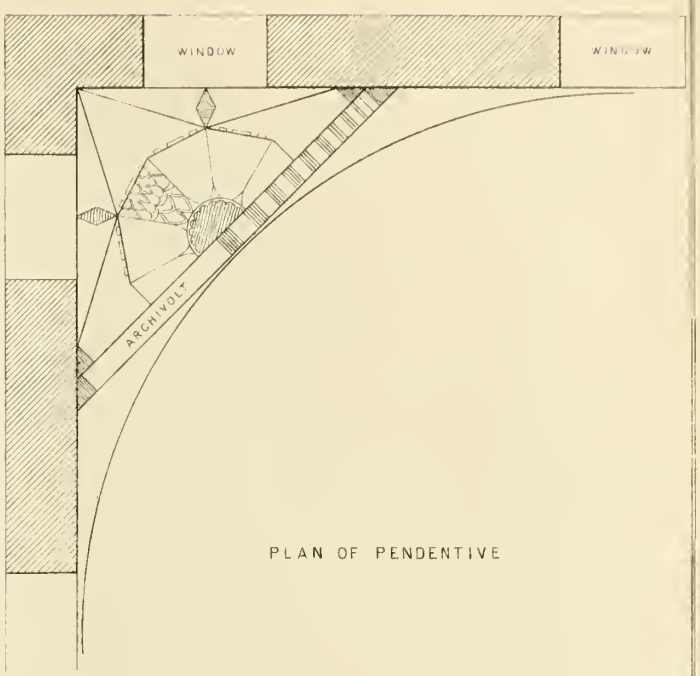
source as much of their building art. In the ruined "Palace of Belisarius, (as it is called,) at Constantinople, the interior round arches have the stones of their archivolts thus keyed or notched, some in the simplest way, some with the "half-round and arris," as in pure Arabian work. This construction appears, therefore, to have an origin as early, at least, as the time of Justinian, (say A.D. 560). (Fig. 13).

The extensive, and often exaggerated use of the relieving arch, is another peculiarity of the openings of Arabic buildings. Hardly a lintel or flat arch which is not relieved, at least once, either by a regular relieving arch, or by what is almost as common, a slight space or open joint between the arch or lintel and the next course, which is again relieved in the same way. This is sometimes repeated with three or four courses. The east gate of Damascus is a good example. (Pl. 2). It must be allowed that the effect (when visible) of this space or open joint, is displeasing; nor does it appear to be a justifiable expedient.

Before quitting the exterior for the interior of the building, I must not omit to allude to those portions of the structure in which wood is used with ornamental effect. I have already described the "Mushrebeeyeh," or "roshán," windows, which of themselves, are sufficient to set fancy at work, and to recall the "Thousand and one Nights." There are however, in addition to these, the trellis work, and pierced boarding used often to screen ordinary square window openings. The old slave market at Cairo, contains a variety of simple patterns of the latter description of wood-work (fig. 11); whilst every coffee shop, and almost every old house presents examples of the former. Besides these, there are the projecting eaves or verandahs of the "Sebeels," usually consisting of narrow boards fastened together with a bead to cover the joint, and finished at the outer edge with the cut bratishing already referred to. (Fig. 8.) In some cases, the bratishings are repeated twice or thrice, one below the other, a few inches being left from the face of one to the back of the next. A delicate lace-like effect is produced by this. These verandahs are usually supported by wooden truss brackets of open construction, which have a very pleasingly picturesque effect. (Fig. 12). It may be remarked of most of their wooden structures, that the material being scarce, is used with great economy and ingenuity.

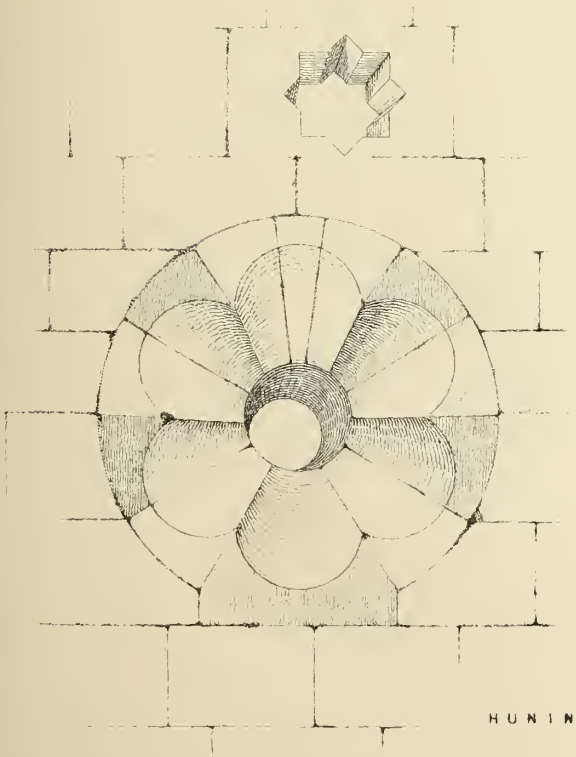
It is time that we now turn our attention to the interior of the buildings, and observe the decorative treatment adopted. In the first place, it must be remembered, that the same use of alternately coloured courses which we notice in the exterior, is very frequently extended to the interior; and, even where they are not built in coloured material, the imitation is carried out in red and white, or black and white colours. This may be seen, not only in the mosques and other large buildings of Egypt, but in the courts and rooms of the private houses, both of Cairo and Damascus. At the latter place, there is scarcely a court of any large house, but presents an example of this system, more or less consistently carried out; whilst the great "Khan of Assad Pascha," in the same city, although a modern, and scarcely "Arab" structure, is a good example of the principle carried out to its fullest extent. (*Date* 1742 A.D.) The interior of the cupola is, not infrequently, decorated upon this system. At the base is a frieze consisting of inscription, either carved or painted, on a dark ground. Over this, the upright circular wall (the drum) which supports the dome itself, is pierced with pointed windows at short intervals. These are sometimes filled with pierced tracery, or have formerly contained coloured glass, which, however, few now retain. The intervals between the lights are sometimes plain, sometimes banded—in other cases are panelled and ornamented in colour or relief to agree with the windows. The cupola itself, is often partially banded in white, black, and red, relieved by zigzag courses; and towards the top, has a radiating counterchanged ornament of the same kind as that already described. This is one treatment, and specimens of this are to be seen in the "Tombs of the Caliphs," notably in that of "Barkook."

PENDENTIVE
EL KUBBET, CAIRO



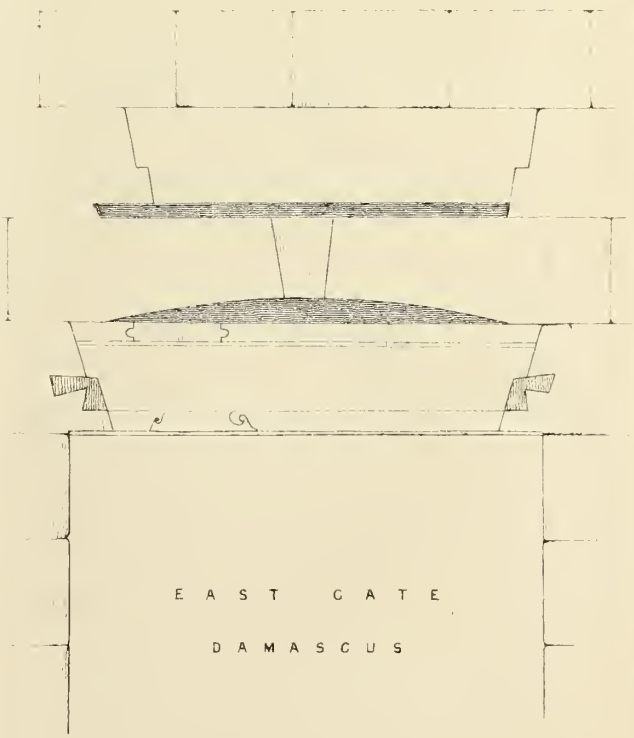
PLAN OF PENDENTIVE

SHAPED WINDOW OPENINGS.



HUNIN

RELIEVED LINTEL.



EAST GATE
DAMASCUS

J. D. CRACE, DELT.

Lithog.d for the R.I.B.A. by Kell Bros. London. E.C.

Occasionally, however, the cupola is far more richly decorated. That of the "Kubbet el Fedawecych has a bold and elaborate Moresque diaper in relief, the face of the ornament almost entirely gilt, whilst the grounds enclosed by the leading lines of the ornament are coloured, blue, red, green and white. The whole is most rich in effect; although, unfortunately, the building is in a very ruinous state. As it is a fine example of the "Kubbet," I will continue a description of its interior ornamentation.

Below the cupola windows is the usual frieze of writing, on red ground, under which runs an Arabic fret border. From this line the pendentives commence, and the construction of these is very uncommon. Across each angle of the square is thrown a plain pointed arch, the apex of which meets the ring of the dome. The archivolt is in red, white, and black stones. The curved face of the pendentive is decorated with flat relief arabesque in stucco; light on a coloured ground; as also are all the plain wall faces in the same story. The alcove, which is recessed to the angle, is the remarkable part of the pendentive, being constructed on the system of fan-vaulting and meeting in an octagonal alcove. This can only be made clear by a reference to the diagram (Pl. 2). Another fret border or string course is carried round the building from the springing of the pendentives—the pointed windows in the angles breaking it—whilst those in the lunettes range above it. The walls of the next lower story are very ruinous, but seem to have been nearly plain, with a dado of marbles inlaid in narrow upright panels—possibly the wall was lined with tiles, or painted with coloured designs; but this is only surmise.

The flat ceilings, whether of Mosques or other public or private buildings, are treated, without distinction, in one of two or three ways. The handsomest, producing the richest effect, is the beam and panel arrangement already described, which seems to have prevailed largely in mosque, sebeel, or dwelling. The finest examples are to be met with in the "Moäiud," "Mahmoudie," and "Kaidbai" mosques; in some of the older sebeels; and in the houses "of the Sheikh, of the Mufti," and "Ebn e' Sadäd," both before referred to. There are, however, many others in the older private houses, but they are difficult to find out and not easy of access, great numbers of the older houses having been destroyed during the last few years.

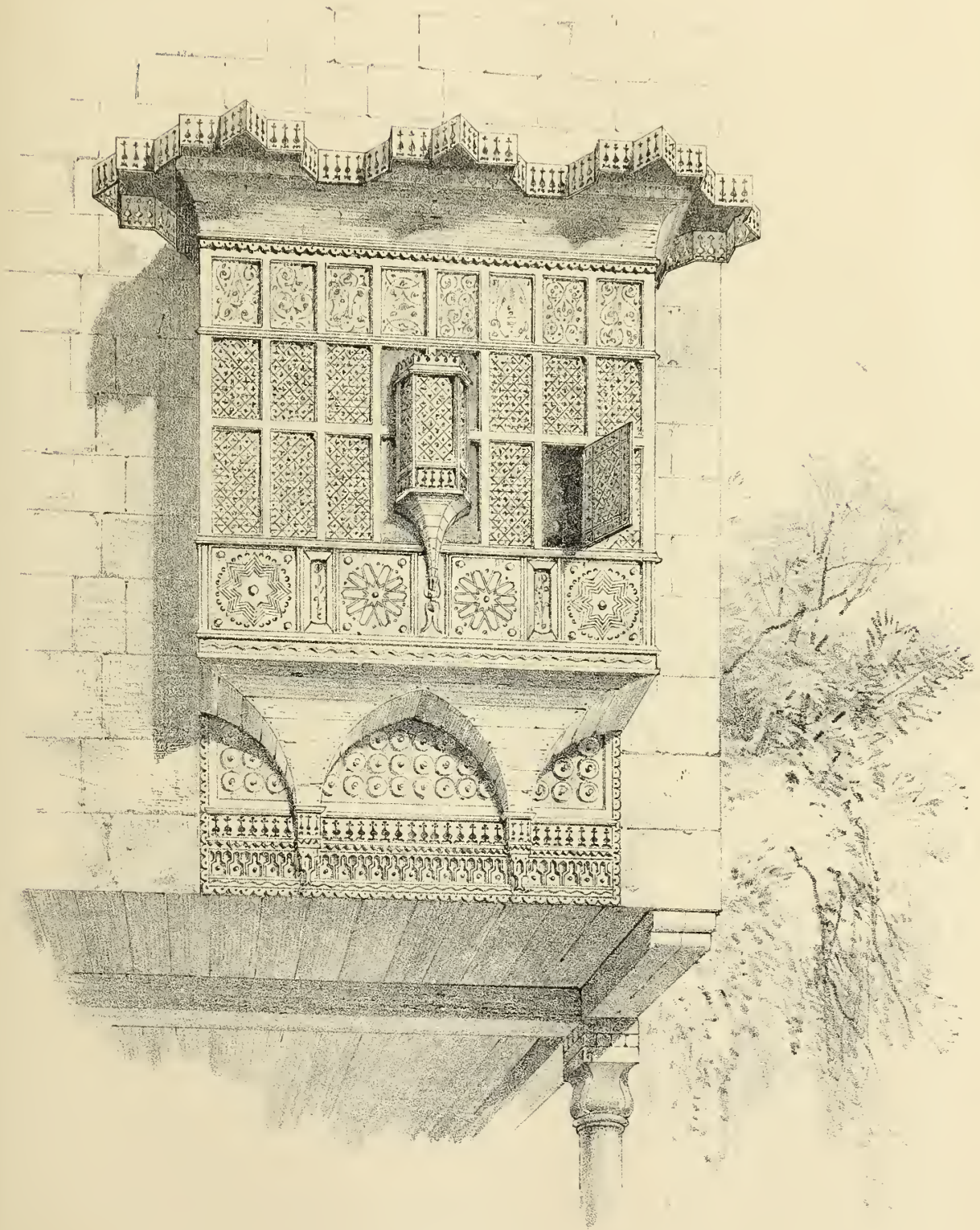
A simpler form of ceiling is that formed by "beam and match boarding." Here the boarding is probably placed diagonally, and the narrow boards are painted successively in various colours, with perhaps a running pattern of conventional flower ornament, or arabesque, on each—the beam being elaborately decorated (as in an example at Damascus); or the beam is decorated with rich diaper or geometrical pattern, and the boarding painted in panels without the division of framing. (Mosque of Mohammed Ganim, Cairo).

The flat ceilings, in which the beams do not show, but which are divided by small mouldings into elaborate geometrical panels, more or less decorated in colour, are of great variety. As I have already incidentally mentioned, they occur in buildings of all descriptions, and are used both internally, as the ceilings of rooms, and externally, in the soffits of the "Mushrebeeyehs" or other wooden structures. Occasionally these are elaborated and enriched by bold pendants marking the central points of the device; and in some instances this system is combined with the beam treatment, as in the entrance corridor to the old "Morostan" at Cairo. There we find the ends of the beams cased, and ornament is carved on the casing. In the same place is a good specimen of wooden cornice formed of a series of polygonal pendentives—a style of cornice to be met with both in Cairo and Damascus (House of Assad Pacha). The most frequent form of interior cornice, in large buildings, is the bold hollow or cove which is divided by coloured decoration into ornamental panels, with rich borders. Korán sentences, in white and gold, on rich blue grounds, are often introduced in these panels, the surrounding colouring being in more subdued tones, and the top and bottom lines of the whole cornice being strongly marked with black and white, bright red, or other vigorous colours.

Below the cornice is usually a frieze, almost always of writing. How beautifully the Arabic character lends itself to ornamental purposes is well known. Probably in no other style of art has writing been so largely used for this end. For, whether externally or internally, wherever there is a frieze in an Arabic building, it consists of writing. Beautiful effects are produced by intermingling the character with delicate scroll-work, the latter being gilt and the writing white, both on a blue ground, as in the "Mahmoudieh" mosque at Cairo. And the writing itself is often wrought into ornamental monograms, whole sentences being so entwined as to be difficult, even for the expert, to decipher. The same use of writing extends to every object in which Arabic ornamental art is expended. Witness their metal vessels, in which the whole surface is frequently covered with inscriptions. The practice doubtless originates in the preclusion of the representation of animal life; the instinct of the artist to appeal, in some direct way, to the understanding and sympathy of the beholder being too natural and too strong to be altogether repressed.

I have already alluded to the use of coloured marble inlay, and tiles for the internal wall decoration. At Damascus the taste for mosaic decoration was evidently very strong, much more so than at Cairo; and the examples of real and imitation mosaic are of untold variety. A mosaic of geometric or other ornament, cut perhaps a quarter of an inch deep in the stone, and filled with hard cement of various colours—black, red, blue or yellow—was also in extensive use with very excellent effect. I must also notice that, at Damascus, interior coloured decoration, of essentially *Persian* character, exists in considerable quantity. Here the walls are divided into panels by bands of rich colour, the ornament being in slight relief, and gilt or silvered. But this is late, and cannot be considered as pure Arabic work. There is another branch of interior ornamental work, which is of infinite variety, and deserves much study. I have already remarked that wood, as a material, must be considered scarce in the region of Arabic architecture. Not only this, but a climate of extreme dryness and extreme temperatures makes its use, in large sizes, difficult or undesirable. Probably, from these causes, all Arabic woodwork is made up of a number of small parts, framing and panels, ingeniously wrought into every variety of rectilineal form and design. (Fig. 14). Doors, panels, window shutters, cupboards—all are made after this fashion; and no two seem to be alike. I agree with those who consider that to this system of woodwork may be traced the wonderful variety of geometric design applied to all materials by the Arabs and Moors. A workman at Damascus, who made for me the panels which I exhibit for your inspection, showed me a scroll in his possession, containing about two hundred traditional designs of rectilinear geometrical forms for wooden panelling. This panelling usually has the narrow framing moulded, and the panels bevelled at the edge. The panels are sometimes left plain, sometimes are painted; but they are also, as you see, occasionally inlaid with ivory or pearl.

The richest specimens, and those most elaborately worked, are also, as I believe, the oldest. These are the screens in the Coptic Churches of "Fostát," or "Old Cairo." In some of these the wooden panels are delicately and minutely carved; in others the panels are inlaid with ivory as ornament; or again the ivory, let in, is itself carved in elaborate arabesques. Even the full-sized drawings which I show of these screens give but an imperfect idea of the minuteness and delicacy of the work; and it must be borne in mind that each panel, and each straight piece of framing, is a distinct piece of wood; and that, moreover, in the original, each screen contains several superficial yards of such work. This style of wood-work is now almost extinct. A few workmen, and only a few, are still to be found at Damascus, where, in the richer houses, there is yet a limited demand for it; but it is no longer in general use. The pretty and characteristic furniture, inlaid with pearl, is still found in Arab households; but all Arab art virtually belongs to the past. It is rapidly being pushed aside by the garish and tawdry products and tastes of Southern Europe.



A 'MUSHREBEEYEH'_CAIRO.

J. D. Crace, 1869.

Lithog^d for The R. I. B. A. by Kell, Bro^s London, E. C.

It is melancholy to feel that almost every example I have quoted is a portion of a ruin, or is shortly doomed to ruin by those sure destroyers—neglect, apathy and selfishness. Monuments worthy of world-wide fame are dropping to pieces, either by utter disregard, or by dishonesty, or by the mildew of a fatalism which *never repairs*. Enquiring once of the Imám, or priest of a mosque, why, since a devout man had built so beautiful a structure to the glory of God, no good man was found to keep it in repair, I received this reply—"Truly he was a good man who built this place for the worship of God; "but it now belongs to God, and, if He wills it so, it will surely crumble and fall. It is as God pleases!"

Such is the Mohammedanism of to-day. We may well look around and ask these ruins if it was such when they were in their splendour. Did they who built them look for this? Was he, who, from the Mosque of Tooloon—just a thousand years ago—called the faithful to prayer, even such an one as the blind Mueddin, who, to-day, from the crumbling minaret, sends a wailing voice over the city as he cries (sadly, as it seems,) "God is most great! There is no deity but God! Mohammed is God's Apostle. Come to prayer—come to security! There is no deity but God alone!"?

Sir M. Digby Wyatt, Fellow, (responding to the Chairman's invitation), said: If the paper we have heard to-night, and the drawings illustrating it, evidencing as they do artistic powers of the highest description, are results of the convalescence of an invalid, I am afraid it reflects a sad reproach upon many of us who are strong and active. I would venture to compliment Mr. Crace alike upon the zeal, ability and energy with which he has collected this mass of information for our instruction and gratification, and for having brought it so agreeably before us this evening. It is too early yet to propose that vote of thanks to him which I am sure some other speaker, no less pleased with his discourse than I am, will be willing and zealous to do by-and-bye; but I cannot refrain now from proffering an expression of my gratitude to him personally for bringing forward so much of novelty and interest to us all. The subject which Mr. Crace has so well treated is a deeply interesting one under several aspects. In the first place, it is highly interesting to us from its relation to the development of style, and its connection with the history of a great family of the human race, under peculiar conditions of faith and social relations. I need scarcely remind you that the germs of the Arabian technical and ornamental arts are to be found in those of the Byzantine empire, to which they had for the most part descended from the decaying Roman empire. If there is anything in Mr. Crace's admirable paper to which any one could take exception—a cavilling in which, indeed, it would be almost wrong to indulge—it might possibly be that the speaker's notice of the history of Arabian art scarcely sufficiently carried us back to the stock upon which it was engrafted. The victorious arms of the Prophet and his immediate followers speedily carried Islamism over vast tracts of country, upon many of which technical and decorative arts had long been cultivated with signal success. Hence the peculiar conventional character with which the Arabians so early stamped the eclecticism arising from the junction effected at Byzantium, in Asia Minor, Africa, and Spain, between the Orientalism of Persian and Indian arts, (as they existed before the Hegira), and the classical type traditional amongst artists and workmen trained on the system of Imperial Rome. I have myself had occasion to point out in this room the intimate connection which existed between the Persians and Justinian, and its influence on Byzantine art. The peace which was concluded between Justinian and Chosroes Nushirvan was one that was "to last for ever," according to the terms of the treaty; and Persian architects were largely employed by Justinian. Thus we see in the details of St. Sophia an evident departure from both the technicalities and the principles which characterised the old Roman works, and a certain marked anticipation of some of those changes of form and predilection for inlay and surface decoration in structure which were afterwards manifested to a

great extent in the works of the Arabs. I wish very much that my friend Mr. Owen Jones could have been present to-night. I went to him yesterday and urged him to come here, and add to our common stock of knowledge on this interesting subject, as he could do so much better than I can. To have done so would certainly have been a labour of love with him, as well as an opportunity of showing that profound acquaintance with the principles as well as the practice of the Moors and Arabs which distinguishes him, and which has so long rendered him the true "propagator of the artistic faith" of the Prophet, and our best interpreter of the mysteries of the interesting style under discussion; but, unfortunately, Mr. Jones was prevented by the state of his health from attending to to-night. I think that is much to be regretted, because he could have so well "pointed the moral" of much of which Mr. Crace "has adorned the tale." The second aspect under which this subject is interesting to us as practical professional men,—students at least, if not masters, of the handicrafts we control,—is the technical basis of this style. This it was which made it vigorous from its earliest date, and has imparted to it the perfection of execution which always characterised it. From first to last it has exhibited the skilful workman compelled to do his best unflinchingly, and obviously to please a master, jealous of good works, who would put up with no half-hearted service. Every artizan, whatever may have been his specialty, engaged on the great works described by Mr. Crace, was a master of his craft, who carried out his work in subservience to the methods and best traditions of his trade, keeping closely to every characteristic of design and workmanship which the materials he used demanded, and which the tools and processes at his command best enabled him to execute. From his intelligence as an operative, his enlightened ideas as a designer, and the perfection which the revival by the Arabian mathematicians speedily effected of the study of geometrical form (which had been carried so far by the ancient Greeks), enabled him to bring to bear upon his special branch of industry, he was speedily in a situation to originate new features in his business, and to make the old ones far more beautiful than they had previously been. Thus in carpentry and joinery, from the very dawn of technical Arabian art, we may observe a clear recognition of the best mode of combining and contrasting both in form and colour, all the various woods which appeared to be at command. Not only was this the case with woods, but we find the same intelligent use of other materials in all the architectural works of the Mahommedans. I differ a little from my friend Mr. Owen Jones in what he has remarked with regard to the place and period in which Arabian architecture was most highly perfected. No doubt it is to be recognised in the earlier portions of the Alhambra, as having attained a thoroughly concreted system, in which, as in perfect Grecian architecture, every part had its definite form and dimension allotted to it, without confusion, and with such true and absolutely mathematical design and setting out as to preclude the possibility of the occurrence of a pattern geometrically inaccurate, or one which does not complete itself in all its parts and repetitions. We find this development of completeness in the Alhambra in its extremest complication, but we find it no less complete, though in a simpler form, in the earlier works at Cairo, such as those of the Mosque Tooloun, and in the Meschita at Cordoba. At the same time we find it associated with better ideas of structure in the technical simplicity of the primitive Arabian system, and in the clear expression of function in every architectural member. Certainly in the Alhambra, with which I am myself better acquainted than with the monuments of the Khalifate, we find the overlaying of the stucco and coloured decoration has to a certain extent hidden the structure itself; and beautiful as this overlaying certainly is, and perfectly as it has been made to harmonise with all of structure which is allowed to remain visible, it generally, to my eye at least, obscures too much. In earlier works, both of the Arabs and Moors, a principle of simple masonic construction is always indicated, and the stone is never overlaid by the plaster, nor is the eye misled by the inlays into confusion as to the system of jointing. In thus dwelling upon the beauty of Arabian

masonry, I would not be understood for a moment as depreciating the plaster work (as such) of the whole range of Mahommedan design, from the days of Ebn Touloun to those of Boabdil el Chico, since during all the many centuries intervening between the reigns of those sovereigns we find, in stucco, admirable hand-worked patterns, executed with a precision and force at least equal to those we meet with in the works of ancient Rome itself. There is one more aspect under which this subject is interesting to us. In the present day there exists on all hands great desire for novelty in the main features of design, as well as in the decoration of buildings. I believe that legitimate novelty in this direction is not to be obtained by a mixing up of styles, or by confusing them together ; it is rather to be found in the development in new directions of technical arts, which, if they have not already done so, may in the future be made to minister to the operations of building and decorating. It was by "developing" in this direction that the Arabians found strength, novelty, and completeness of style, and as they did so may we do. When I look at these tiles on the table, I see one direction at least in which we have been for some time so following an Oriental lead, and I note in them a very legitimate and excellent form of decoration, calculated, I think, to effect a great change in the aspect both of our exterior and interior architecture. I know it has, to some extent, done so already, and I believe it will do so yet more. I see also in this variety of Arabian woodwork, involving an apparently very intricate, though really simple, combination of different patterns, nothing which any skilled workman with the least desire to do, what has been so well done, and what seems so thoroughly congenial with a just idea of good joiners' work, would not be able to do perfectly in this country at the present day. When one looks at the rude materials and processes by which elaborate and beautiful works were carried out in almost every technical art by the Arabians, it is difficult to imagine why the same good work should not be designed by us architects, and wrought by our artificers, who should learn to take a pride in their calling, and be honoured in proportion to their merit in it, as the Arabian workmen were. All that is wanting is that the same simple taste, good judgment, and technical energy should be bestowed upon our designs, and upon our works. Men are yet to be found in India and Persia, in Cairo, and even in Spain, who, in some degree, retain the theory and practice of the most ancient Arabian tradition. I myself saw in Granada, only a few months ago, a man working with a lathe of the kind described by Mr Crace. The only difference was, that the lathe I saw consisted of a long iron bar, with "gudgeons" sliding on it, and capable of being fixed by screws at any distance apart. Between these gudgeons a piece of wood was so held as to be capable of gyration, with the least possible amount of friction. The workman sat down with this in front of him, and kept it working with a bow, similar to that constantly used by Indian turners, which twirled the wood round rapidly on the iron gudgeons. This he did with his left hand, while with the right hand he steadied himself, changed his cutting tools, and measured from time to time the gauge of the work he was doing. For what right hands usually do with ordinary lathes, he substituted his right foot, which exhibited, an elongated great toe just like a thumb, and a metatarsal development such as I never saw before. He held the chisel tightly between the great and second toe, and seemed to use his foot just as easily as we ordinarily use our hands. It was curious to find at Granada such a retention of the simple machinery and method by which it is probable that the Moors executed the bulk of their larger ornamentations in wood, dependent upon the lathe for the fashioning of their leading forms. I trust I may be permitted to allude to one more point before I sit down ; and that is, the opportunity for surface decoration which was afforded by the large wall surfaces in which the Orientals have always delighted, and by their simple arch soffits and vaults, rarely cut up by moulded work or chamferings. I cannot help thinking that these remarkable "reversible" patterns which we see here, and the effect of which is invariably excellent, were probably originally due to the desire to economise labour and cost, by making one piece of material serve, by counterchanging and interchanging the parts into which it was cut, to produce

patterns in different coloured materials without the waste of any portion of material. At the same time I cannot but consider that, speaking theoretically, patterns so formed appear to be in strict compliance with that which was, and should be always felt to be, a bounden duty to carry out in coloured decoration, viz., equalisation of superficial areas of contrasting colours in the design of patterns intended to convey a sense of tranquil beauty. The principle was no less important when the contrast was intended to be effected by *chiaroscuro* only or by variety of materials than it was when the effect was intended to be produced by contrasting colours. Equalization was demanded of the light and dark shades. It is such regular balance which keeps ornamentation quiet, and which gives to it its dominant aspect of repose. Balance, it should always be remembered, is just as essential to repose in decoration, as equilibrium is to security, and its appearance to a sense of security, in structure.

Mr. W. BURGES, Fellow.—May I ask one question of Mr. Crace, and that is whether the colours in these decorated buildings are simply primitive colours, or whether secondary and tertiary tints were used?

Mr. CRACE.—With reference to the colours, the primary colours were used largely, but the secondary and tertiary colours are also used. In the instance to which I have referred of a panelled ceiling, it is common to find the sides of the beams,—in fact, I think one or two of the coloured examples will show that,—the sides of the beams are coloured with maroon or a tertiary red, not a positive red. In the same way greens are employed; but I may observe that the more varied the tones of colour employed, the later is the date of the decoration. In the earlier buildings the more positive tones are employed, but broken in that case by black and white in large quantity, the red, blue and gold being used to give point and precision to the ornamentation. The red would in that case be vermilion; the blue, cobalt or ultramarine; and gold would represent the yellow of the scale.

Mr. BURGES.—I think these drawings are so valuable, and they teach us so much, that I hope Mr. Crace may be induced to allow them to remain in the room for several days longer; and I venture to express a hope that some of them will be given with the printed Paper, more especially those showing the treatment of the ceilings and doorways. A few woodcuts of such subjects would add very considerably to the value of the Paper; as the object of the author has evidently been not so much to give us a history of Arab Architecture (for we can learn that from books) as to tell us how we may improve our architectural decorations. Another thing which deserves notice is that this sort of work is allied, in some respects, to that of the thirteenth century in Europe. No doubt, during these times, we had great importations from the East, and in the decoration of the Gothic houses of the present day I should imagine this style of decoration is peculiarly adaptable; thus instead of having all our doors of the usual description, we might have a few with panels like those we have now before us. I should be glad to hear whether these panels are very costly.

Mr. CRACE.—They are expensive, as everything of that kind is in Damascus. I am afraid I have not the same opinion of Arab mercantile transactions that I have of their architecture. Every mercantile transaction is always the subject of a good deal of bargaining. It generally begins by two persons opening the market at opposite ends, and at last they make a compromise. In the case of these panels, the compromise at Damascus would come to something like £4. or £5. per panel, perhaps about thirty to forty shillings per square foot, according to the elaboration of the design. In England I think they would be very costly; more especially when we consider that under the Trades' Union regulations every separate mitre would represent a sum of money. I have never submitted the question as yet to a British workman; but I should say that if you could persuade some one to work for you, alone and under cover, you might possibly get these panels made at from £5. to £10. each, without the inlay; but in any ordinary London workshop they would cost vastly more.

Mr. T. Morris, Associate, asked if the pattern was cut out of a solid piece of board.

Mr. Crace.—No; each figure of the panel is a distinct piece of wood. This will be seen on looking at the back of the panel.

Sir Digby Wyatt stated that four panels of similar workmanship to these, which he designed for the state railway carriage of the Pasha of Egypt, the size of the panels being about 6 feet by 4 feet, the cost of the four panels was a little under £500., and they were considered cheap.

Professor Kerr, Fellow.—I have great pleasure in rising to propose a vote of thanks to Mr. Crace for his paper. I think we have reason to congratulate ourselves that Sir Digby Wyatt postponed that duty, inasmuch as it gave him the opportunity of offering those highly interesting remarks with which he has favoured us, and of rendering good service in the discussion of this really interesting subject.

Mr. Phèné Spiers, Associate.—I have great pleasure in seconding the proposition of thanks to Mr. Crace, and in doing so, to bear testimony not only to the remarkable accuracy of his drawings, but also to the excellent choice of subjects he had made for illustration; inasmuch as they represent nearly every point that one would wish to bring forward, in order to give a general idea of Arab decoration. There is one point partially alluded to by Sir Digby Wyatt, viz. the great power which the Arab architect seems to have acquired almost from the first in constructural features. Mr. Crace has alluded to the Mosque of Tooloon as one of the earliest instances in which the pointed arch is found. It is, however, generally allowed that the Mosque of Amrou, in Fostat, or old Cairo, and which dates from the first fifty years of the Hegira, is one on which all the features of the Arab arch are foreshadowed. You have on one side of the mosque circular-headed arches, that being the first form of arch employed; on a second side slightly pointed arches; and on the other two pointed and slightly horse-shoe arches. You also find there that curious introduction of wooden ties to the arches to which Mr. Crace has alluded, of which he has given an illustration from another mosque. One recognises at once the necessity of these cross pieces of wood, and I was astonished to find they were objected to by some of those who saw them in my drawing; but I should imagine that the chief reason for their adoption was because in a country subject to visitations of earthquakes, it was the more secure way of supporting the arches, and far better than buttresses, which were rarely employed. I may say that though this form of construction seems strange to us, yet, after a little time, one does not notice its existence; and the general effect of a range of arcades is not interfered with by the ties. Becoming from the first perfect masters of construction, the Arabs seem to have played as it were with the decoration of constructive feature. In the elaborate decorations of the voussoirs of their doorways, they play with constructive features. You see this again in the decorations of the pendentives of the circular and the square niches. The first forms they chose were those handed down by Greek architects in the series of domes or small barrel-vaulting. They cut these up into a series of smaller barrel vaults, or coves. In the case of the gateway of Damascus, there is a still further development of this style of decoration. We find the second phase of this kind of decoration, the upper portion of the arch is left simple, and the lower is divided into a series of semi-domes, to which we give the name of stalactitic vaulting. Again, it is curious to notice the simple principles in the design of the geometrical figures which the wooden panel before us contains. One of the chief elements of that decoration consists of a figure composed of ten branches, with double lines intersecting. This figure gives the cue to all the rest. The distance of these circles of twelve radiate from one another, giving all the remaining features; in fact, on a slight analysis of the principles of design in Arab decoration, we are surprised to find its simplicity. I beg very cordially to second the vote of thanks, and also to express my personal acknowledgments to Mr. Crace for the amount of time and great care he has expended upon the preparation of the paper, and the beautiful drawings by which it is illustrated.

Mr. CRACE, in reply to the Chairman, expressed his willingness to allow the drawings to remain some days for inspection.

The CHAIRMAN, in putting the vote of thanks, said, I will not occupy your time with any observations further than to add my tribute of admiration both of the matter contained in the paper, and the beautiful collection of drawings exhibited. There is one fact of a practical nature which I may mention. I recollect our ingenious neighbours the French in their last Exhibition had in one of their houses a large collection of these trellis panels; and I was not aware that this kind of work was so expensive as has been mentioned to-night.

The vote of thanks to Mr. Crace was then unanimously adopted, and the meeting adjourned.

Royal Institute of British Architects.

At the Ordinary General Meeting, held on Monday, 14th February, 1870, JOSEPH CLARKE, V.P., in the Chair, the following Paper was read:—

A SUMMARY OF MR. RUSKIN'S EARLIER ARCHITECTURAL CRITICISM,

By ELIJAH HOOLE, Associate.

As Mr. Ruskin's architectural theories have been given to the world for twenty years, and have, during that time been constantly discussed and reviewed, no great amount of novelty attaches to the subject of this paper, neither are the views expressed in it advanced without the greatest deference to the experience and judgment of the Members of the Institute, whose extended range of research and practice will enable them to correct the misapprehensions and to point out any errors which may chance to be advanced as truths.

It seems certain that until architects are agreed as to the principles of their art no concerted action or real progress can be counted on. Mr. Ruskin has delivered a canon of criticism, which not only aims at the settlement of those principles, but which is intended to enable every reader to distinguish good architecture from bad, and to constrain not merely architects, but all classes of the community, to cultivate the one and to extinguish the other.

Now if this could be done, if the principles of our art could be clearly laid down and thus extensively diffused, a great stride would unquestionably have been taken towards raising our art to its proper position, and towards establishing and maintaining a just and intelligent criticism of all architectural works, both past and present.

But Mr. Ruskin has to a great extent succeeded in making his readers critics. His own enthusiasm, his mastery of language, and his elegant and poetic style, take a strong hold upon almost all readers, independently of their possessing any previous feeling for art; and these, together with his sympathy with all earnest and genuine work, and his delicate perception of the beautiful, have enabled him, by his writings, to do more to make architecture popular than perhaps any one author has ever done. We, as a profession, are greatly indebted to Mr. Ruskin for calling the attention of all the reading world to the subject, and for insisting so strongly as he has done upon its dignity and importance. And this must be the case to a very great extent even to those of us who do not feel disposed to endorse his theories. But as a large number of persons form their opinions upon architecture, either partially or wholly, according to these laws of criticism, an architect is likely to be frequently confronted with them in the course of his practice, and should either be prepared to adopt them or to give valid reasons for rejecting them. The subject, therefore, has a practical as a well as a speculative aspect.

Mr. Ruskin's success in popularizing architectural knowledge makes one indulge a hope that one day the principles of architectural art will be put into definite and authoritative form by architects themselves, and that they will be universally understood, not only by those occupied in reducing them to practice, but by every educated person.

As the limits to which this paper is necessarily confined are too small to allow even a passing glance at the whole of Mr. Ruskin's published opinions upon architecture, those contained in 'Modern Painters' and in 'The Seven Lamps of Architecture' will alone be referred to at present.

What is architecture? Uselessness is its distinguishing characteristic, says Mr. Ruskin. You build a sea-wall to keep out the tide—that is not architecture, it is only building, for it is useful; but make one course of the masonry project, and carve it into a cable moulding, which is useless, and then you have architecture. In other words, architecture consists in the disposition and adornment of edifices raised for any purpose whatever. The distinction between architecture and building being thus defined, their connection is then very clearly pointed out. "There cannot be any architecture which is not based upon building, nor any good architecture which is not based upon good building, but . . . . . Architecture concerns itself only with those characters of an edifice which are above and beyond its common use."

Discarding, for the sake of brevity, but not without some regret, Mr. Ruskin's poetical nomenclature, we next find him distinguishing the leading principles which govern and animate the art, and which are to be traced in all real architecture, since they are "based upon man's nature, not upon his knowledge," and "possess so far the unchangeableness of the one as that neither the increase nor imperfection of the other may be able to assault or invalidate them."

The first principle laid down applies chiefly to devotional art, and is best defined as the opposite of the prevalent feeling of modern times, which desires to produce the largest results at the least cost. For instance, "of two marbles equally beautiful, applicable, and durable," it would prompt to the choice of "the more costly, because it was so, and to the choice of the more elaborate of two kinds of decoration equally effective, for the same reason." The justice of this principle rests upon our answer to the question whether God can be honoured by the presentation to Him of any material objects of value, or by any direction of zeal and wisdom which is not immediately beneficial to men? Feeling, conscience, and reason, Mr. Ruskin admits, would answer this question in the negative, but he believes that he finds an affirmative answer in the costliness and splendour of the Jewish tabernacle and temple. His argument on this point is far from convincing, but is followed by a very just and powerfully drawn contrast between modern domestic and ecclesiastical architecture, decoration, and furniture—the luxury of the one, and the bareness and meanness of the other. "The tenth part of the expense which is sacrificed in unnoticed fineries or formalities, cornicing of ceilings, graining of doors, fringing of curtains, and thousands such things which have become apathetically habitual, would, if collectively offered and wisely employed, build a marble church for every town in England." Two conditions are deduced from the principle just laid down. One, that all materials and workmanship should be the best of their kind, whether the material be marble or brick—whether the sculpture be the carving of a Flaxman, or rude as Norman hatchet work. The other condition is that the appearance of labour upon an architectural work is of the highest value. While labour cannot be carelessly or idly bestowed without offending the eye and producing a painful effect, so where credit is given for it in the mind of the spectator, as in the sculpture of the backs of statues in a pediment, or in the working out of ornaments in dark or concealed places, it cannot be withdrawn without deception. While delicate ornament may be placed near the eye, and bolder and rougher work at a distance from it, yet if any kind is to be both near and far off, it should be as boldly and rudely cut where it is well seen as when it is distant. Ornament deserves its name only when its points of light and shade tell in the general effect, but if generally seen it be "a mere incrustation and meaningless roughness, we shall only be chagrined by finding, when we look close, that it has cost years of labour and has millions of figures and histories in it." The Northern Gothic never loses sight of the architectural purpose of ornament, never fails in its decorative power; not a leaflet in it but speaks, and speaks far off, too, and so long as this is the case there is no limit to the luxuriance in which such work may legitimately and nobly be bestowed.

Truth is the second leading principle insisted on. Poetry and painting involve no violations of

truth, even in their most imaginative creations, and when violations of truth occur in these arts they are for the most part confined to the treatment of their subjects. Less subtle and more contemptible violations of truth are possible in architecture, in direct falsity of assertion respecting the nature of material or the quantity of labour. Admitted in thoughtlessness they produce fatal effects upon art. "The meagreness of poverty may be pardoned, the sternness of utility respected, but what is there but scorn for the meanness of deception." Architectural deceits may be divided into false suggestions of construction; deceptive representations of material or of sculptured decorations; and the use of cast or machine-made ornament. But certain degrees of each of these are admissible, since when the mind is informed beyond the possibility of mistake as to the true nature of things the affecting it with a contrary impression, however distinct, is no dishonesty, but is, on the contrary, a legitimate appeal to the imagination. Thus the pillars of the apse of Beauvais Cathedral, though too slight to carry the weight placed upon them without assistance from the unseen external flying buttresses are not deceptive, since the greatness of the weight is as unperceived as the means of its partial support, and sufficient support for the apparent weight is provided in them. But nothing can be worse, either as judged by the taste or the conscience than affectedly inadequate supports, suspensions in air, and other such tricks and vanities; and Mr. Hope wisely reprehends for this reason the arrangement of the main piers of St. Sophia at Constantinople. Deceptive assumptions of structure, such as Flamboyant flying buttresses, pierced and curved till all strength is lost, are still more blameable, and are to the serene constructions of early Gothic what the Greek ghost was to the armed and living frame. The use of iron is a fruitful source of attenuated construction, and although it is difficult to say abstractedly why iron should not be used as well as any other material, yet since by all past practice and by all present association architectural laws are limited to the use of clay, stone, or wood, a new system of such laws must be developed before metallic construction can attain an equal dignity. Iron can be used as a cement but not as a support, as a tie but not as a pillar or a girder, without loss of masculine character and scientific power. Dovetailing and other adjustments of stones should rather be adopted. A voluntary submission to self-imposed laws (shown in nature, for example, by the formation of the bones of the elephant from lime rather than from adamant) really displays greater power in overcoming difficulties than if the limitation were not accepted.

The evil of surface deceits consists in attempted mendacity, as in graining or marbling; or on a larger scale the painting of deceptive relief, as, for instance, on the roof of Milan Cathedral. This is to be distinguished from the architectural designs mingled with the figures which are painted on the roof of the Sistine Chapel, and which, stopping short of the vulgar force of deceit, are in such grand fellowship with the figures as to increase their dignity. So Correggio at Parma has made the interior of a dome some 30 feet diameter look like a cloud-rapt opening in the seventh heaven, without deception, for the subject precludes it.

To conceal material by painting, or even by whitewash, is not wrong when no deceit is attempted. Gilding is equally innocent, though it may be used too lavishly. Incrustation of brick buildings with marble, so constant in the great periods, is to be regarded as mosaic upon a large scale, and no more a deception than gilding, the value of the material preventing any mistake. But both external painting and all other modes of decoration are essentially unarchitectural, which tend to divide the work into two kinds, one of which is more perishable than the other, and in time dies away from it, leaving it naked and bare, unless it have noble, enduring qualities of its own. For this reason all the natural colours of stone and those of mosaic should be had recourse to before external colouring is employed. "The transparent alabasters of San Miniato and the mosaics of St. Marks are more warmly filled and more brightly touched by every return of morning and evening rays, while the hues of our cathedrals have

died away like the iris out of the cloud, and the temples whose azure and purple once flamed above the Grecian promontories stand in their faded whiteness, like the snows which the sunset has left cold."

But cast or machine-made ornament is the meanest and most dishonest of all deceptions, because the least necessary. It endeavours to appropriate to itself the interest with which we regard hand-work, and, like a false jewel, is contemptible in proportion to its success. Moulded brick, terra-cotta, tile and porcelain are exceptions, since they will never be mistaken for carving. "It is not the material (of which a thing is composed), but the absence of human labour, which makes a thing worthless, and a piece of terra-cotta or of plaster of Paris wrought by the human hand is worth all the stone in Carrara cut by machinery."

A more subtle and dexterous system of deception is exhibited in the intersectional mouldings of the Flamboyant period, which for the sake of exhibiting the skill of the stone-cutter were elaborated into the most complicated and fantastic forms. The earliest traceries consisted of penetrations in the shield of stone forming the window head, the openings and not the intermediate spaces of stone receiving the most attention. Then these intermediate spaces caught the eye of the architect, and a pause ensued during which both received equal thought. At last the bars prevailed. They soon became thin, apparently flexible and penetrable by one another. They were intersected, re-duplicated, and cut off arbitrarily. Occasions were made for exhibiting these peculiarities, resulting in the destruction of the capitals of the shafts, in the adoption of "the flattened arch, the shrunken pillar, the lifeless ornament, the liny moulding, and at last in the fall of the great dynasty of mediæval architecture, which could not again arise from the ruins of its own violated truth."

Power is the next principle discussed. Two broad divisions of it are marked out, one showing man as able to gather and select beauty from nature, and the other exhibiting him as arranging and governing material forces. The expression of abstract power is seldom aimed at by architects, and can only be attained by a recognition of the sympathy in the forms of noble building with what is most sublime in natural things. "The grey cliff loses not its nobleness when it reminds us of some cyclopean waste of mural stone; the pinnacles of the rocky promontory arrange themselves undegraded into fantastic semblances of fortress towers, and Nature herself does not disdain to accept power and majesty transferred by association from the works of man." The architect cannot contend in pitched battle in emulating the sublimity of natural objects. It would not be well to build pyramids in the valley of Chamouni, and St. Peter's would gain vastly had it been placed on a plain like that of Marengo or on a site like that of the Superga at Turin or La Salute at Venice. The apprehension of size depends more upon the excitement of the imagination than on measurements by the eye. Few rocks even among the Alps have a clear vertical fall as high as the choir of Beauvais, and if we secure a good precipice of wall or a sheer and unbroken flank of tower, and place them where there are no enormous natural features to oppose them, we shall feel in them no want of sublimity in size. Mere size will not ennoble a mean design, but every increase of magnitude will bestow a certain degree of nobleness upon it. It is well, therefore, to determine at first whether a building to be designed is to be markedly beautiful or markedly sublime, and to ascertain whether the lowest degree of magnitude at which sublimity begins—that which will make a living figure look less than life beside it—can be reached. Few buildings of any pretension to size look as large as they really are, as is proved by the appearance of a figure in any distant and especially in any upper part. Magnitude may be best displayed in buildings by bounding them with continuous lines, and by keeping the extreme points all in sight at once. Majesty will be lost by breaking the boundary line too violently; by concealing much of the building, as in the well-known case of the recession of the dome of St. Peter's, or in churches generally, in which the highest positions are at the intersection of the nave and transepts. Such designs may often have pre-eminence in symmetry

and feeling, but a detached campanile or even a low western tower would make the height much more apparent. Imagine the loss to the Lombard churches if their campaniles were carried to their present height above their crossings. For the boundary line from base to coping for either wall or tower, Mr. Ruskin loves the true vertical, or the vertical with a solemn frown of projection, as in the Palazzo Vecchio of Florence, and he considers the propped machicolations of this and of the Duomo far grander headings than any Greek cornice.

It is especially to be noted that those buildings on the whole seem the vastest which have been gathered up into a mighty square, and which look as if they had been measured by the angel's rod, "the length and the breadth and the height of it are equal."

The interest of some buildings is in their walls, and of others in the lines dividing their walls. In the Greek temple the wall is as nothing, and the entire interest is in the columns and frieze. In French Flamboyant and in our own perpendicular the object is to get rid of the wall surface and to fix the eye on tracery of line. But in Romanesque and Egyptian work the wall is a confessed and honoured member, and the most noble and sublime effects are produced by the varying action of time and storm, and by the play of passing light upon its extended and unbroken surface. The choice of a form approaching a square for the main outline is necessarily consequent upon an appreciation of the sublime element in architecture as just laid down. For while the fullest sense of surface is only attained by removing the terminal lines to the greatest distance from each other, grace and perfect proportion require an elongation in some one direction. Thus the architect has the choice of two types of form, the square when the surface is to be the subject of thought, and the elongated area when the divisions of the surface are to be the subjects of thought. Both these orders of form are marvellously united in the Ducal Palace of Venice; its general arrangement, a hollow square; its principal façade, an oblong, elongated to the eye by a range of thirty-four small arches, while it is separated by a richly canopied window in the centre into two massive divisions whose height and length are nearly as four to five, the arcade which gives it length being confined to the lower stories, and the upper, between its broad windows, left a mighty surface of smooth marble, chequered with blocks of alternate rose colour and white. "It would be hardly possible to invent an equal arrangement of all that is in building most dignified and most fair." In the Lombard Romanesque the two principles are more fused into each other, as most characteristically in the Cathedral of Pisa. Then as to the manifestation of power in details, that masonry will be the most magnificent which accommodates itself both in the finish and the size of the stones to the conditions of the work, sometimes heaping rock on rock with Titanic commandment, and anon binding the dusty remnants and edgy splinters into springing vaults and swelling domes. There is also a magnificence in the natural cleavage of the stone, to which the art must indeed be great that pretends to be equivalent. Next to size and weight the power of architecture may be said to depend upon the quantity and intenseness of its shadow. Among the first habits that a young architect should form is that of thinking in shadow. All that he has to do must be done by spaces of light and darkness, and his business is to see that the one is broad and bold enough not to be swallowed up by twilight, and the other not to be dried like a shallow pool by the noon-day sun. That this may be, light and shade must be massed, (either in somewhat equal weights, or with considerable disproportion) for majestic design depends on breadth of treatment. There are two marked styles of using light and shade, one in which, as in Greek sculpture and pillars, the forms are drawn with light upon darkness; the other in which they are drawn with darkness upon light, as in the early Gothic foliation. The latter is generally characterized by a trenchant style of design, in which both darks and lights are flat and terminated by sharp edges, while the former is associated with a softened and full manner of design, in which the darks are much warmed by reflected lights, and the lights are rounded and melt into them.

After passing through the Roman into the Romanesque architecture the broad flat lights were still made valuable by masses of energetic shadow; but with the enlargement of the window came the conception of tracery formed by penetrations, which from within are forms of light, and from without are forms of shade. The method of decoration by shadow was common to both northern and southern Gothic, but was used on divergent methods; the southern architect covering his walls with exquisite leafage and with inlaid stones, while the northern architect sunk foiled holes like those in his traceries, depending on the shadows for effect. By retaining the forms of the shadows in its sight the Venetian Gothic survived in its purity when the other Gothic styles became debased, and perished by allowing the lines of tracery and moulding rather than the forms of light and shadow to absorb attention. So also with the foliage, at first the form of the leaves is most important, and the under-cutting is slight though sharp, but in the later styles the stalks are made more prominent, and the leaves are wiry and crisp. Breadth and mass, of bulk, of light, of darkness, of colour, will alone, Mr. Ruskin concludes, give power and majesty to architecture.

In speaking of beauty, which is the next general principle examined, he requires us to grant him two postulates, first, that all lovely forms are taken from natural objects, with its converse, that all forms not so taken are ugly; and second, that those forms which are most frequent in nature are the most beautiful, while those which are more rare are less so. Tried by this rule the Doric triglyph and cornice are excluded as unimitative, and the Greek fret is condemned as being no ornament, because although the imitation of a natural form assumed by crystals of bismuth, it is rare and formed artificially. By an application of the same principle the egg and dart moulding and a lozenge shaped Lombard ornament are commended for their compliance with common natural forms. Heraldry and inscriptions are also unfit for decoration, though admissible when the information they afford is of more importance than ornament. Scrolls and ribands, drapery (except as an exponent of other and higher things), and especially garlands, and festoons of flowers and fruit, are condemned as being unnatural arrangements of natural objects. The square-headed hood moulding to the windows of the Elizabethan and modern Gothic is as offensive by its poverty as the garland by its profusion. Ornament must consist of the studious arrangement of natural forms, and is noble in proportion as it represents the highest orders of existence. Imitated flowers are nobler than imitated stones, imitated animals than flowers, imitated human form of all animal forms the noblest. But all are combined in the richest ornamental work, as for instance in the bronze of Ghiberti. If we ask, what is the right place for ornament? Not on the things belonging to active and occupied life, Mr. Ruskin replies; not on the shop front, or the railway station, not to hide some unsightly and disagreeable necessity, or to adorn what no one has time to look at. Its right place is where it can be calmly and quietly seen; on the house rather than on the shop, in the drawing-room than in the factory, on domestic furniture than on tools of handicraft.

Proportion, another element of beauty in architecture, Mr. Ruskin holds to be infinite. No rules will teach it. It is to be invented by the mind and eye of the artist, and cannot be limited to or deduced from existing fine works. The chief general law which may be noted is the necessity of the predominance of one member over the rest, whether in towers, spires, mouldings, or whatever other feature may be named. Symmetry is to be considered as chiefly connected with the horizontal, and proportion with the vertical division of a building, and the two possess several points of contrast. Thus, while a nave may be divided into equal bays, a tower cannot rightly be divided into equal stages. And while symmetry may be possessed by one, two, or any larger number of members, at least three members are necessary to form a proportion.

The conventional treatment of natural forms in existing examples of art is partly involuntary, and partly intentional, but the rule seems to be that the nearer portions of ornament only, and especially the

animal forms, should be wrought out in absolute imitation of nature, while those ornaments at a greater distance from the eye should be connected with them by a graduated scale of abstraction. For there is a danger lest perfect sculpture throughout should degrade the architecture associated with it into a mere framework, and that it should not fulfil its part in the composition as accessory to the general effect at all distances. When these rules were violated, and when non-natural forms were adopted in decoration, the doom of architecture was sealed.

Architecture being not merely the representation of an idea, as sculpture is, but a reality itself, requires colour for its completion; while the imagination may be left to supply colour to the ideal form. The natural colours of marble and stone are the most permanent, as well as the most beautiful and appropriate, and in using these colours for architectural decoration they should be arranged on nature's principle of colouring, which consists in complete independence of form and construction. A column should not be painted with vertical lines, nor separate mouldings with separate colours, or sculptured ornament one colour and its ground another; but colour should be reserved for the flat wall and broad shaft. The limiting outlines of colour must be simple, not refined, or you will lose perfection of colour as you give perfection of line. All arrangement of colour, for its own sake, in graceful forms is barbarous, and we are consequently limited in architectural colouring to simple masses, such as zones, circles, triangles, &c., and to combinations of these. "Even in figure painting the greatest colourists have either melted their outline away, as Correggio and Rubens, or purposely made their masses of ungainly shape, as Titian, or placed their brightest hues in quaint patterns in costume, as Veronese and Angelico."

Heraldic devices, and even the cross and vertical bars of the Tudor or Flamboyant, though contemptible in form, may be excellent when treated in colour only; as in a beautiful and bright bit of wall painting behind the Duomo of Verona, composed of coats of arms and cardinals' hats, set in alternate squares. But the front of the Doge's Palace at Venice, with its mouldings and sculpture of white marble, and its chequered wall surface of pale rose-colour; or the green and white marble patterns of San Michele, at Lucca; and especially, and above all, Giotto's Campanile, are the most fitting and perfect examples of the application of colour to the exterior of public buildings. Four descriptions of architectural colouring may be distinguished. To perfect and independent sculpture, and to alto-relievo, colour should be applied cautiously (if at all) in points and borders only, and in a system non-concurrent with their forms. To basso-relievo and intaglio, bolder and increased colour may be applied, in proportion to their reduced fulness of form, but still non-concurrent with it. Thirdly, we have monochrome design, in which entire figures, of abstracted form and of one colour, are detached from a ground of another, and lastly patterns in vivid colour.

Similar principles should govern the forms of painting to be associated with architecture, although their limits are not easily assigned.

Vitality—the next main principle to be considered—can be traced in all good architecture, even in that which is an imitation of earlier works, as well by its frankness in not attempting any concealment of the source of its borrowing, as by its audacity in disregarding precedent, where precedent becomes inconvenient. Subordination of execution to conception, contempt of exact symmetry and measurement, and a relation of proportions to each other, somewhat similar to that found in organic forms, are still nobler and surer signs of vitality. These are displayed in the Duomo of Lucca and the Towers of Pistoja; and numberless other instances show them not to have been accidental but intentional. A splendid license is taken with the niche decoration of the portal of St. Maclou, at Rouen. The subject of the tympanum bas-relief is the Last Judgment, and the sculpture of the inferno side is carried out with a power whose fearful grotesqueness Mr. Ruskin describes as a mingling of the minds of Orcagna

and Hogarth. "The demons are, perhaps, even more awful than Orcagna's, and in some of the expressions of debased humanity in its utmost despair, the English painter is at least equalled. Not less wild is the imagination which gives fury and fear even to the placing of the figures. An evil angel poised on the wing drives the condemned troops from before the Judgment seat; with his left hand he drags behind him a cloud, which he is spreading like a winding sheet over them all, but they are urged by him so furiously that they are driven, not merely to the extreme limit of that scene, which the sculptor confined elsewhere within the tympanum, but out of the tympanum and *into the niches of the arch;* while the flames which follow them, bent by the blast, as it seems, of the angel's wings, rush into the niches also, and burst up *through their tracery*, the three lowermost niches being represented as all on fire."

True vitality can only be produced by a man's heart being put into his work. It is not coarse cutting of stone, it is not blunt cutting, that is necessarily bad; but it is cold cutting—the tranquillity of heartless pains; shown more in finished work perhaps than in any other. Sculpture is rather the cutting of the effect of form than of form itself, and half the sculptor's touches are not to realize but to put power into the form.

Expression is often gained by incomplete and seemingly rude Mediæval sculpture, which is never attained in finished work, and in Greek sculpture is not even attempted. Such intelligent handling is most precious, and lacking it, much modern ornament is dead as leaves in December, without one warm touch, one tender stroke upon a whole façade.

Not the least noble aspect of architecture is that presented when we regard its connection with the past. In this aspect it can even confer qualities which add beauty and interest to nature herself. Poetry and Architecture are the sole conquerors of the forgetfulness of men, and the latter in some sort includes the former, and is mightier in its reality. We learn more of Greece from her sculpture than from her poetry. Even domestic buildings should be built to stand as long as human work can endure, and should each tell their own story so long as they exist. The interest of the great architecture of Italy and France depends not on the isolated richness of palaces, but upon the cherished and exquisite decoration of even the smallest tenements. The most elaborate piece of architecture in Venice is a small house, consisting of a ground floor, with two stories above, with three windows in the first and two in the second; and one of the most interesting pieces of fifteenth-century architecture in North Italy is a small house in a back street behind the market place of Vicenza, also with only a ground floor and two stories.

Public buildings should have a more distinct historical purpose. Every ornament on them should convey some portion of national history or feeling, however rudely or symbolically expressed. In the Ducal Palace at Venice, every capital has its meaning, though all are subordinated to general effect and structural requirements. Why might not our public buildings likewise unfold our history? and even when time shall have wasted their sculpture, why might they not still retain their impressiveness by the grandeur of their arrangements and masses, which should be designed with reference to the effect of age upon them? For the picturesque in architecture does not consist in the "expression of universal decay," but rather of its reminding us of what is sublime in nature; and its angular and broken lines, vigorous opposition of light and shadow, grave, deep or boldly contrasted colour, suggest objects upon which a true and essential sublimity rests—as rocks or mountains, stormy clouds or waves. As a general rule, the picturesque makes shadow important, and not form only; and makes accidental and inessential form the subject of thought—as, for instance, those of hair and drapery in sculpture—as well as the essential form of the limbs. Picturesqueness is sought in architecture in its decay, because it is commonly inconsistent with its original character, and by rents and stains is assimilated to the work of

nature. But if rendered consistent with the inherent character of the architecture, age will add the noblest characteristics to a building. Those styles which, like the French Gothic, depend for their effect upon the arrangement of points of shade, rather gain in richness of effect when their details are partly worn away, and should therefore be adopted for more perishable materials, than those styles dependent on purity of line, as Italian Gothic, which should be practised in the most enduring materials.

For no restoration is possible. You may have a lifeless imitation, you may have another spirit given by another hand, but you can never bring back the old life either to the worn stone or to the new copy. Old buildings do not belong to us, to alter or destroy. They are owned by the dead who have left them, and by all their successors, not by us only.

Severity in architecture, and its subordination to fixed laws, are rendered necessary by the vastness, the daily influence, the costliness, the human handiwork, the historical duration, and the realism of its productions, as well as by the image it presents of man's truest happiness and power. Both theory and experience combine to prove that architecture can only be great when it is under as strict a law as language, and when variations of style are only so many dialects. Other necessities are matters of doubt. It is not a new style, but *one* style, that is wanted—one set of laws, that might be taught and learnt. Originality in architecture no more means new style, than originality in writing means new words; and neither are the work of one man, but of multitudes. They are spontaneous, and not the result of effort or design. The forms of architecture already known are good enough for us, but we want unity, fellowship and order in their use; and without these, all attempt at art is the merest dilletantism. Success in other arts is dependent upon unity in architecture. Some one style should be chosen, and authoritative examples selected, studied and taught; at first for exact imitation, and, after mastery has been attained, a license of change within certain limits might be permitted. The style chosen must be applicable to all buildings, without exception, and would probably lie between the Pisan Romanesque, the Gothic of Giotto, Venetian Gothic, or the English early decorated. This last, enriched from French sources, would probably be safest and best. The greatest freedom from embarrassment in choice, and from the necessity of an universal range of study would result, as well as great power and facility in design and fancy.

You have now before you an outline of Mr. Ruskin's architectural theories, as given in his earlier works, upon which any comment, except from other members of the Institute, would be out of place this evening. In concluding this paper, I would therefore, without expressing entire concurrence with all that he has advanced, acknowledge the debt under which every architect must feel he has laid our profession by placing our art in its true position of honour and importance, and by his brilliant and conscientious endeavours to enunciate its principles.

Professor Kerr (answering to the Chairman's invitation).—I am at least quite sure that the efforts of the lecturer will not be allowed to pass without a cordial vote of thanks. It is not always convenient to propose for discussion, in a Society like this, the opinions of a popular writer; and it will be readily understood that no one could venture to carry the present subject into debate without considerable misgivings. In point of fact, this meeting can scarcely be called upon at all to give expression, either directly or indirectly, to its opinion. At the same time we may, I think, trust ourselves to consider generally the condition of things architectural, which is indicated by what the lecturer has laid before us.

It seems to me that he has done well in advancing no criticism of his own. He has also done well, I think, in confining himself to the mere attempt to condense, as I understand him, into a short statement, the essence of the views of this eminent author, as developed at least in his earliest, and perhaps

best writings. One could easily perceive, from the very tone of the lecturer, that he did not expect practical architects to agree in all respects, or even perhaps in many respects, with the theories which he was quoting. Indeed, as a practical architect, himself, he could not but have felt, in the very process of quotation, how very limited was the extent to which such dramatic principles could apply to sober every-day work; and it is not unlikely that even Mr. Ruskin has often felt the same.

Now, I may venture to say that architecture seems to me to have been during the last generation or two, very much overridden by theorists; and what I would now endeavour to do is to examine the position of Mr. Ruskin, as the last and most popular of these. The position which he occupies is in fact one which has been arrived at by a direct and intelligible process; and this process, it may be interesting to trace.

Some of our seniors remember, and all of us know, that less than fifty years ago the dilettanteism of classic Antiquarianism was supreme in architectural criticism. Everything in design was referred to certain more or less authentic precedents derived from the works of the ancient Greeks and Romans. Direct copyism, therefore,was not merely authorised, but universally inculcated. Every "attempt at originality" as the phrase went, was met literally with these very words: "Where is your precedent from the ancients?" We may consider this absurd. But at any rate it was an absurdity so firmly established as to be deemed impregnable for ever. We now see that it was impossible for such a romantic principle to remain absolute for any great length of time, without at all events undergoing some material change. Accordingly before long it was found that a certain other romanticism had been gradually creeping into architectural learning, springing out of the same kind of admiring contemplation, not of the classic ruins of Greece and Italy, but of the Gothic ruins of our land. So in course of time, very slowly, (we are seldom sufficiently alive to the fact that our mediæval revival has been at this moment a whole century in progress,—thus swiftly does time move;) very slowly, I say, and by imperceptible degrees a new kind of copyism arose—for Mr. Ruskin himself, with all his advocacy of Gothic architecture, is decided enough, I believe, in the language he uses with respect to this mere transfer of copyism from one field to another—a new kind of copyism arose, and every day gained ground, until the first was ultimately overthrown, but overthrown, be it observed, by nothing more elevated, or more elevating, than the precisely similar practice of the second. If, therefore, the theories of academical classicism had ridden architecture hard, those of the archæological mediævalism had come to be no less oppressive. Then came another kind of romanticism into view, which under the name of Ecclesiology acquired a distinct character and definite demands, becoming indeed a potent influence, and almost profound science. Suffice it to say upon this delicate point, that it is well known how deeply many of the best of us have deplored the embarrassment into which the theories of the ecclesiologists in their turn have led architectural practice during the last twenty years,—triumphant as they are, indeed, at this moment. But this is not all: at the next step, new theories of the Picturesque were introduced, and apart from both archæology and ecclesiology, took their place in architectural criticism. Many writers, thinkers, and designers in architecture have been very glad to dwell upon this element of the picturesque; and if they have gone too far, professing it to be the one essence without which architecture is of no value, there is certainly something of genuine art in the sentiment, compared, with which the copyism of antiquarians and archæologists, and the formulæ of ecclesiologists, all alike fail to satisfy the intellect. At all events, here we have one more step in our march of theories.

The last step which seems to demand mention is the introduction of the theories of the Poetic. Here, at last, we come to Mr. Ruskin. He is neither more nor less than the High Priest of a faith which directly identifies Architecture with Poetry; and this for the first time in artistic history. Other writers enough have given us sentimenta ty and rhodomontade; but it is this writer alone who yokes

together intelligently, and intelligibly if such a thing were possible, the shapeliness and unshapeliness—both loved alike—of building, with the figments, frenzies, paradoxes, and pangs unutterable, of the poetic soul. Such, then, being Mr. Ruskin's position, what has he up to the present moment made of it? Our lecturer has laid before us, from perhaps the best of his works, a pretty complete system of his principles; but what do they amount to? We cannot say they are canons of architectural criticism; we cannot say they are precepts of architectural practice; all we can say is, they are wayward architectural dreams. We listen, some of us charmed, some mystified, some amused, all astonished,—fortunately none offended; but I fear none in any way edified. We perceive a certain sensation in the mind of having listened to a piece of masterly music thoughtfully and often powerfully rendered, but beyond its own utterance useless. When we are called upon to accept Mr. Ruskin's definition that Architecture is Uselessness, let him not be offended if we put it thus, that this architecture of his is most emphatically useless.

I would not detract, however, from Mr. Ruskin's eminence in his own particular field; and I do not know that he himself has ever claimed the merit of any direct practical teachership in professional architecture as some suppose. Indeed I fear those of us who assign to him so high a place in architectural criticism and in the advancement of architectural knowledge and skill, are only doing with him as he did with Turner, who is said to have declared himself all unconscious of the possession of those abstruse merits which the Oxford Graduate so elaborately discovered. It is very likely that Mr. Ruskin himself is much less ambitious than his admirers profess to believe him to be. But, taking him as a charming writer, and, as I have said, Priest of the visionary Poetry of Architecture, we will every one of us I am sure be most willing to assign to him a high place. In amusing the public on architectural ground, in gilding brick and mortar with glowing words, no one can compete with him; but as practical men we must not forget, or permit others to forget, that when he brings to bear upon a subject so familiar to us that kind of thought and expression which is significantly called "word painting," he is using the most treacherous of all possible argument, fair and false, fascinating to the uninformed, but utterly uninstructive to the initiated, and always dangerous to the young. I am most anxious not to say a word unjustly: I would not turn upon such a writer and challenge him to take pencil in hand and shew what he means; I do not admit that he takes such ground as to entitle us to appeal to that otherwise infallible test; I prefer to allow him to say all he pleases, reserving only to myself the assurance that he desires to keep within rational and respectful limits; but I think it is at the same time most important that we should prevent it from being understood by the public at large—who look to us for common sense and not for poetic passion,—that we architects are the admirers of this writer which we are often supposed to be. Give him all praise and approbation for his manly eloquence, his gracefulness of thought, his intensity and unimpeached honesty of purpose, and for his bold critical whimsies, the more vague the more suggestive, as all dreams are; but let it not be said that he is to be recognised as an architectural teacher. Mr. Ruskin is an honorary member of this Institute, and this shows the appreciation in which we hold him. We do not discourage his efforts, on the contrary, we honour them, but this is enough.

There is no doubt a certain definite philosophy which Mr. Ruskin develops in his studies of criticism (for this I think is the proper phrase); but it is never purely architectural—indiscriminately artistic, perhaps, and dramatic,—but never anything like an æsthetical system. For instance, it must have been frequently observed in what the lecturer read to-night that although there was something that bore on the face of it the appearance of æsthetics, yet when it came to an issue it proved to be not æsthetical after all, but romantic, and quite illogical. When Mr. Ruskin says there can be no architecture without building, and no good architecture without good building, this, as a general statement,

is one which, to his mind, as an uninitiated person, may be eminently suggestive of what may appear to be important truths; but we, who know what building is—he not knowing it—can see nothing in the proposition but the vaguest commonplace, to which he could not by any possibility attach any real meaning in detail. The suggestiveness is not that of æsthetics, therefore, but that of poetry, and indeed of paradox, if we revert to the leading axiom that architecture is uselessness. So in the whole of the propositions which the lecturer has quoted, some apparently sound, and some apparently unsound, there are no really sound æsthetic canons, but only exercises of the poetic fancy. And why should poetry be brought thus to bear upon architecture? At the best it can be little more than a play upon words—the suggestion of that which may be a fact by the assertion of that which must be a figment; and Mr. Ruskin, as a poet confessed, can never be expected,—and it is in vain for us to demand it of him—to condescend upon plain intelligible statements involving practical architectural principles. Let us look therefore at this great writer in that particular view, and I think we do him far more honour, and assign to him more creditably his proper place in the economy of architectural study than if we thoughtlessly accede to a mere compliment of courtesy by which he is made to appear to be a great teacher of our art. I hope Mr. Ruskin will yet do great service to other art; but I have no hope of him in architecture. It is too complex a thing in detail, and too commonplace in practice, for any such passionate wooing as his. When we congratulated him in this Institute not long ago on his appointment to an important professorship of art, we did so cheerfully enough; and we may cordially believe that in fulfilling the duties of his appointment he will be able to work out some important principles of art; but I for one can only hope that he will say less of architecture than of other arts. There is a great field open to such a thinker and such a writer, in sculpture, painting, and the minor delineative arts; but architecture had better be left in other, not abler, but more practical hands. I think Mr. Ruskin has not written much on architecture lately. We have heard that he speaks even disparagingly of his own writings. A German philosopher says, "We are very near waking when we dream that we dream;" so also let us say that Mr. Ruskin has come all the nearer to correct principles of architectural criticism when he mistrusts his own writings. I will not say that he has done damage to architecture; but I must ask leave to say this, that if he will consent to devote the great powers bestowed upon him by nature to the development of poetic principles in arts of the more poetic sort, he will do more for the promotion of his own mental enjoyment and the public benefit than by random efforts in respect of that undoubtedly great and fascinating art which we who know it best, know to be nevertheless confined, as respects its poetry, within narrow limits.

Mr. JOHN P. SEDDON (Hon. Sec.)—I have pleasure in seconding the vote of thanks to Mr. Hoole for his paper, as I think it has been useful to have been reminded in this brief summary of the principal points which Mr. Ruskin has brought forward in his earlier works. I cannot agree with Professor Kerr that they are of an unpractical nature, nor has he, in my opinion, pointed out in what respects he considers them to be so. Since Mr. Ruskin's first works were published many years have passed, and many minds—practical minds—have been devoted to the subject, and have developed further and carried out independently similar principles to those suggested by that writer, but I must say—I speak for myself, and think I may do so for others,—that many minds have been influenced by him, even in their practice, while certainly the enthusiasm of numbers has been kindled by his eloquence. It seems to me there are many things which are now regarded as truisms, but which were not considered as truisms at the time, and simply taking the chapter on Truth, I should support the whole gist of the arguments which it contains. I think its forcible pleading was greatly needed, considering the faults which pervaded architecture at that time, from the neglect of veracity both in construction and ornamentation. In calling the attention of the public and the profession to the simple maxim that

architecture, like all other things, should be founded upon honesty and truth, Mr. Ruskin did great service, and you may take every one of his chapters in the same way, and find that they contain valuable instruction and advice. Thus the chapter on Life in Architecture, if you consider the general bearing of it, lays down many important principles which were not previously recognised, and which are scarcely recognised thoroughly yet, and therefore I contend that Mr. Ruskin is to be looked upon as a great teacher of the principles of architecture as well as other arts, and that the profession, as well as the public at large, owe to him great thanks for the able services which he has rendered them.

Mr. H. W. Brewer, Visitor.—I was not present to hear this paper read, and having only heard a portion of the discussion, I am unable to join in it to any length. It seems to me, however, that the great charm of Mr. Ruskin's writings is that he has taken us into a new field of architecture, and has drawn our attention to the beautiful mediæval works of Italy which were before little understood and known, and of which but few architectural drawings had previously been made. Mr. Ruskin opened that field, and described a great deal of charming detail, particularly decorative work, to be found in Italy; and no one can doubt that for the use of precious materials, such as marble and coloured materials, which we now see so frequently in architectural work, we are to a great extent indebted to Mr. Ruskin and his writings.

Mr. Edwin Nash, Fellow.—I feel that it would be presumptuous in me to prolong this discussion after Professor Kerr's excellent speech; nevertheless, as the meeting is somewhat scanty, I will offer a remark. It seems to me that Mr. Ruskin's writings have been of great value to architecture, inasmuch as any man who raises the imagination of the professors of a fine art must be benefiting that art; Mr. Ruskin has done this, and he is, as Professor Kerr has said, the high priest of poetry in architecture and other forms of art, but that we have learnt a great deal from Mr. Ruskin I cannot admit; his poetic treatment of art throws a pleasing halo about it, and as the foundation of our own work is chiefly practical, we do want something of this kind to cheer us. But much of what Mr. Ruskin gives us is neither new nor of a practical nature. He gives us rules or canons and we can understand the canon of Truth, perhaps, but I doubt whether there is one in this room who can tell me what the canon of Proportion is. There must be such a canon, for if there be no difference in sizes there is no proportion. You must have gradations of position and of size; and if any one can lay down rules with regard to these items he will have done some good. Admiring Mr. Ruskin as I do in many respects, I am grateful to Mr. Hoole for having brought this subject before us; and I hope that the time will come when we may gather from Mr. Ruskin's works something of a more tangible nature than heretofore.

The Chairman, in putting the resolution, remarked that Mr. Hoole's paper had been the means of eliciting criticisms upon Mr. Ruskin's past works, and it would be interesting if the same gentleman would on some future occasion take up the subject of Mr. Ruskin's present opinions.

The vote of thanks having been unanimously passed, the meeting adjourned.

Royal Institute of British Architects.

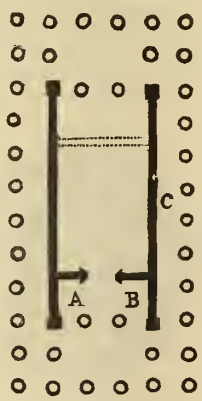
At the Ordinary General Meeting, held on Monday, the 28th day of February, 1870, EDWARD I'ANSON, Vice-President, in the Chair, the following Papers were read:—

SOME NOTICE OF THE CELEBRATED INSCRIPTIONS, COMMONLY CALLED THE TESTAMENTUM AUGUSTI, IN THE TEMPLE OF AUGUSTUS AND ROME AT ANCYRA.

By Professor DONALDSON, P.P., Hon. Sec. For. Corr.

ANCYRA was the Metropolitan town of Galatia in Asia Minor, and is now called Angora, being distant from the borders of the Black Sea about two degrees of latitude, and lying 39° 55′ N. by 32° 20′ E. on our charts. It was on the high road of communication and thoroughfare of traffic between the eastern and western worlds of antiquity. Although of Greek, or more properly Gaulish, origin it owes its principal renown to the time when it came under the empire of Rome, as the chief town or capital of the Tetrarchy of the Galatians, to whom S. Paul wrote his Epistle. The citadel occupied the summit of a volcanic rock, the sides of which were very precipitous, and the buildings of the town were grouped around it. The ruins now consist almost entirely of the monuments erected by the Romans; and our Honorary and Corresponding Member M. Texier in his description of Asia Minor, 8vo. 1862, p. 480, states that inscriptions notice a hippodrome, baths, aqueducts and many temples due to the magnificence and piety of their conquerors. There still exists a noble fragment of a marble hexastyle peripteral temple of the Corinthian order, the lateral walls of the cella with the antæ at the ends, and the wall of the pronaos with the doorway now remaining. It doubtless was the one dedicated to Augustus and Rome, as represented upon a silver medal of the town under Nerva, struck by T. Pomponius Bassus Præfect, with an eagle in the tympanum of the pediment. The pediment, the entablature and fluted columns no longer exist, but the details of the capitals of the antæ, representing winged victories with foliage of acanthus continued along the wall as a species of capping, are of the finest style of art. Monsieur Texier, in plate 28 of his work already quoted, gives a view in front of the pronaos: the doorway, which is of noble proportion, rises as high as the top of the antæ capitals, with finely profiled consoles and enrichments throughout. The pure elegance of the details of this temple are an incontestable evidence of its belonging to the period of Augustus. The restorations and the buildings erected under subsequent emperors, especially of the time of the Antonines, in Asia Minor are depraved in taste, an evidence of which is to be found in the Temple of Diana at Teos, recently studied by Mr. Pullan, who has noted the inferior style of the frieze and sculptures, showing a restoration of a much later time. After the decline of the empire it was converted into a Byzantine church; subsequently it formed part of a Turkish mosque of Hadschi Beiram: and ultimately it has become a burial place with wretched brick hovels built up against one of the flank walls of the cella. The peculiar interest, which attaches to this beautiful specimen of Roman art, now arises from the inscriptions incised upon the walls of the pronaos and cella. A portion of these inscriptions relate to the ceremonies and games given upon the occasion of the dedication, when three hundred pairs of gladiators fought; for Ancyra was one of the Neochor cities of Asia Minor, a class to

which I make special allusion in my work 'Architectura Numismatica,' p. 132. It had in consequence its periodical festivals in honour of Augustus and Rome. The inscriptions also record the names of kings and others, who contribnted to defray the expenses of the games; and mention is made of other exhibitions of combats of gladiators varying from twenty-two to three hundred couples of combatants, courses of horses and chariots, hunts of wild beasts, sacrifices of hecatombs, largesses distributed, and oil given for periods varying from four to twelve months with scrupulous minuteness. But the most remarkable of these historical records are those in Latin and Greek, copies from the brass pillars, which existed at Rome under the care of the Vestals, attached, it is supposed, to the Mausoleum of Augustus in the Campus Martius. These pillars contain what is strangely termed the Will of Augustus, whereas it is rather a recital of his acts and deeds. The earliest authentic notice, that we have of it from travellers, is by Tournefort, 1717, who gives one plate of illustration. Our countryman, John M. Kinneir, a century after, in his 'Journey through Asia Minor, &c.' 8vo. 1818, slightly alludes to it. Our Honorary and Corresponding Member, M. Texier, gives a fuller account with plates in his work on 'Asia Minor,' fol. 1849. And, he having called the attention of Mr. W. Hamilton to it when at Smyrna, that gentleman went specially to Angora, bestowing much time in deciphering what he could, mentioning it in his work, 1842. At length, by order of the Emperor of the French, Napoleon III., Messieurs George Perrot and Edmond Guillaume, were sent to take accurate transcriptions, which they published in a folio work begun in 1862, and still in progress. Lastly the learned scholar Theodor Mommsen, of Berlin, published in 1865 a special work in 8vo. upon the whole matter, subjecting it to the most patient investigation, summing up all the particulars relating to the inscriptions, enriching it with critical notes and references to all the historical authorities, and on three sheets giving the texts in columns, as they appear on the marble blocks of the temple.



The Latin text is inscribed on the wall of the pronaos, one half which is the commencement, being to the left (A), and the other half, which is the conclusion, being to the right (B), as one enters. The cella is about 34 feet wide by 50 feet 7 inches long. The courses of marble are precisely one foot six inches high, and the blocks vary in length. They had square sunk channels, horizontal and vertical at the joints, and the surface appears to have been cut down to the level of the sunk face of the channelling, so as to leave it level for the inscriptions. On either side there are three columns of lettering, varying from 3 feet 9 inches to 4 feet 2 inches in width, occupying a height of six courses of marble, or 9 feet, and a total width of surface of about 12 feet. There are fifty-three lines of lettering, a letter and interspace equalling one inch and seven-eights together, and the letters about half, but varying, as they do not follow the regularity usual in modern inscriptions, and are consequently more picturesque. Pocock's idea seems to be, that the lettering was gilt on a vermilion ground.

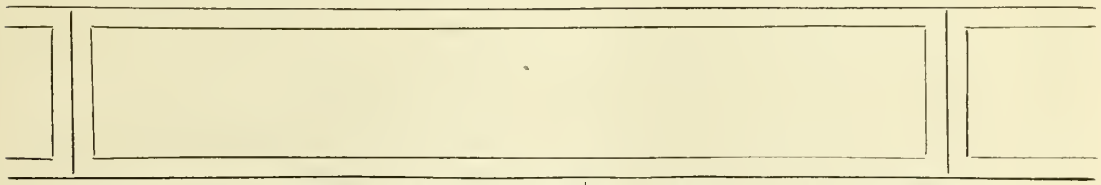
These particulars are more specially appreciable in the last-named careful work of Perrot and Guillaume, as the sheets on which they represent the inscriptions are to a scale of one-tenth of the original size. The Greek text is a translation from the Latin, and is incised on one of the flank walls (C) of the cella, against which the hovels above mentioned had been built. This circumstance has caused it to be much injured, and considerable parts of the surface have been rubbed down, so as to obliterate the characters. It also is in columns or vertical divisions, and assimilates in that respect to the Latin.

It is a remarkable circumstance, that, whereas in both inscriptions there are considerable surfaces defaced, so as to render them illegible or very difficult to make out; yet the Latin portion, to which I venture to call more particularly your attention, that is, the paragraphs relating to the public works of

Augustus, is free from any very serious blanks, and leaves little which, does not admit of restoration from the Greek, and thus mutually the two texts assist in the elucidation of the whole. The headings of the two inscriptions are in characters much larger than the rest, that to the Latin inscription is to the following effect:—

"Of the deeds of the Divine Augustus, by which he subjected the world to the Empire of the Roman People: of the expenses he incurred for the public good and the Roman People—on two brass pillars, which are placed at Rome—a correct copy."

It will be perceived that this heading divides the subjects, upon which the inscriptions treat, into two sections. It is a portion of the second that most interests architects, as to the public works he erected, comprising temples, basilicas, theatres, fora, porticoes, etc., etc. And he concludes by stating that he dictated it in his seventy-sixth year. The paragraphs of the Latin inscription relating to buildings are on the right hand (B) of the pronaos, and column IV begins as follows. The numbers are for the sake of reference to the translation.



1	CVRIAM · ET · CONTINENS · EI · CHALCIDIC	VM · TEMPLVM · QVE · APOLLINIS · IN
2	PALATIO · CVM · PORTICIBVS · AEDEM · DIVI · I	VLI · LVPERCAL · PORTICVM · AD · CIR
3	CVM · FLAMINIVM · QVAM · SVM · APPELLAR	· PASSVS · EX · NOMINE · EIVS · QVI · PRI
4	OREM · EODEM · IN · SOLO · FECERAT · OCTAVIAM	· PVLVINAR · AD · CIRCVM · MAXIMVM
5	AEDES · IN · CAPITOLIO · IOVIS · FERETRI · ET · IOVIS	TONANTIS · AEDEM · QVIRINI
6	AEDES · MINERVAE · ET · IVNONIS · REGINAE · E	T · IOVIS · LIBERTATIS · IN · AVENTINO
7	AEDEM · LARVM · IN · SVMMA · SACRA · VIA · AED	EM · DEVM · PENATIVM · IN · VELIA
8	AEDEM · IVVENTATIS- AEDEM · MATRIS · MAGN	AE · IN · PALATIO · FECI
9	CAPITOLIVM · ET · POMPEIVM · THEATRVM · YTRVM	QVE · OPVS · IMPENSA · GRANDI · REFECI
10	SINE · VLLA · INSCRIPTIONE · NOMINIS · MEI ·	RIVOS · AQVARVM · COMPLVRIBVS · LOCIS
11	VETVSTATE · LABENTES · REFECI · ET · AQVAM ·	QVAE · MARCIA · APPELLATVR · DVPLICAVI
12	FONTE · NOVO · IN · RIVVM · EIVS · INMISSO	FORVM · IVLIVM · ET · BASILICAM
13	QVAE · FVIT · INTER · AEDEM · CASTORIS · ET · AEDEM ·	SATVRNI · COEPTA · PROFLIGATA
14	QVE · OPERA · A · PATRE · MEO · PERFECI ·	ET · EANDEM · BASILICAM · CONSVMP[TAM] IN
15	CENDIO · AMPLIATO · EIVS · SOLO · SVB · TITVLO ·	NOMINIS · FILIORVM . M[EORVM · I] N
16	COHAVI · ET · SI · VIVVS · NON · PERFECISSEM ·	PERFICI · AB · HEREDIB[VS · MEIS · IVSSI]
17	DVO · ET · OCTOGINTA · TEMPLA · DEVM · IN · VRBE ·	CONSVL · SE[XTVM · EX · DECRETO]
18	SENATVS · REFECI · NVLLO · PRAETERMISSO ·	QVOD[EO]TEMP[ORE · REFICI · OPORTERET
19	[CONSVL]SEPTIMVM · VIAM · FLAMINIA[M · EX] ·	MA[NIBIIS]ARI[MINO · TENVS · ET · PONTES]
20	O[MNES]PRAETER · MV[L]VIVM · ET · MINV[C]IVM	[REFECI]
21	INPRIVATO · SOLO · MARTIS · VLTORIS · TEMPLVM	[F]ORVMQVE · AVGVSTVM · [EX · MANI]
22	BIIS · FECI · THEATRVM · AD · AEDEM · APOLLINIS · I	N · SOLO · MAGNA · EX · PARTE · A · P[R]I[V]ATIS
23	EMPTO · FECI · QVOD · SVB · NOMINE · M · MARCELL	I · GENERI · MEI · ESSET · DON[A . EX]
24	MANIBIIS · IN · CAPITOLIO · ET · IN · AEDE · DIVI · IV	LI · ET · IN · AEDE · APOLLINIS · ET · IN · AE
25	DE · VESTAE · ET · IN · TEMPLO · MARTIS · VLTORIS · C	ONSACRAVI QVAE · MIHI · CONSTI
26	TERVNT · HS · CIRCITER · MILLIENS	

1 The Curia and Chalcidicum attached to it, and the Temple of Apollo in
2 the Palace with porticoes, the Temple of the divine Julius, the Lupercal, the portico at
3 the Flaminian Circus, which I allowed to be called Octavian from the name of him, who had erected
4 the prior one on the same spot, the Stand (or Imperial Box) at the Circus Maximus,

5 the Temples in the Capitol of Feretrian Jove and Jupiter Tonans, the Temple of Quirinus,
6 the Temples of Minerva and Juno the Queen and of Jupiter the deliverer on the Aventine,
7 the Temple of the Lares on the top of the Via Sacra, the Temple of the Dii Penates in Velia,
8 the Temple of Youth, the Temple of the Mater Magna in the Palace I built.
9 I rebuilt the Capitol and Pompeys Theatre both at a great expense
10 without any inscription of my name. The chanels of the aqueducts in very many places
11 decaying by age I restored : and the water, which is called Marcia, I doubled
12 by a new Spring brought into its course. The Julian Forum and Basilica,
13 which was between the Temple of Castor and Pollux, and the Temple of Saturn, and the works begun
14 and far advanced by my Father, I completed; and the same Basilica consumed
15 by fire upon a larger plan under the title of the name of [my] Sons
16 I began; and, if I should not live to finish them, [I have commanded them] to be finished by [my] heirs.
17 Eighty-two Temples of the Gods in the city, while I was Consul for the sixth time, I rebuilt by decree
18 Of the Senate, nothing being omitted which (it behoved me to make good).
19 Consul for the seventh time (I repaired) the Flaminian way, from the spoils, up to Rimini,
20 And (all the Bridges) except the Mulvian and Minu[c]ian,
21 On private ground I built from the spoils the Temple of Mars Ultor and the Forum of Augustus.
22 I built the Theatre near the Temple of Apollo on ground in great part
23 bought of private persons, which should be in the name of M. Marcellus my Son in law.
24 From the spoils in the Capitol in the temple of the Divine Julius, and in the Temple of Apollo, and in
25 the Temple of Vesta, and in the Temple of Mars Ultor, I consecrated
26 what cost me about "*milliens*" of sesterces, (according to Ainsworth about £807,000.)

I should remark, that this extract contains about one-tenth of the whole inscription. The rest relates to the nations conquered or settled under the Roman rule by Augustus; and the Britanni are mentioned, and the names given of two of their kings, one of whom is DVMNOBELLANVS, and part of another beginning TIN. A certain indistinctness in both the inscriptions from injury, causes some doubt as to the precise names. Mommsen admits the possibility of three British Princes DVMNO : BELLAVNVS and TIM : : : Evans in his admirable work 'The coins of the ancient Britons,' p. 198, alludes to this passage of our inscription, and considers that DVMNOBELLAVNVS is identical with the DVBNOVELLANVS of the gold coins, which he illustrates plate IV, 6, 7, 8, 9; and he suggests the probability of the indistinct letters TIN and unfinished name to refer to TIN [COMMIVS], one of our known ancient Princes. The inscription also records the foundation of colonies, the recovery of standards from the enemy, a very important circumstance with the Romans, and for which coins were specially struck with the words "Signis receptis" or special notices, as "Civibus et signis militaribus a Parthis recuperatis." See 'Architectura Numismatica,' p. 95. It notices his alliances with peoples and kings, and the honors conferred on him by the Senate and people; and it recites the gladiatorial shews, sea fights and games, which he gave; and his philanthrophic benefactions to the cities of Italy and the provinces, devastated by war or natural catastrophes, like those described in the letters of Pliny to Trajan. And in one part it mentions, that he had as conqueror replaced in the ravaged temples of all the cities of the provinces of Asia the ornaments, that had been taken away by the enemy as their prey. It alludes also to the spectacle of a naval battle, which he had given in Trans Tiber at a spot called the Grove of the Cæsars; having taken the soil from an area eighteen hundred feet long by twelve hundred feet wide, and in which thirty beaked triremes and biremes and other small ones fought, and in which were about 3,000 combatants besides the rowers. In one passage he notes, with great indifference, that in eight contests of gladiators, given in his own name and those of his son and nephews, about 10,000 men had fought. Such disregard do the Romans

appear to have had for human life in the games given for their amusement! And in various authors we read of two hundred and two hundred and fifty lions slain at one time.

Much allowance must be made in this catalogue of the deeds of Augustus, on account of the customs of those periods: for what may seem to us a vainglorious recital made by an individual of his own acts and doings, was a practice derived from the more Eastern* usages, and to us it would appear less unbecoming if narrated in the third person instead of the first. The works at Rome may not seem very numerous, considering the length of such a reign, and that they were done by the direct command of an absolute sovereign. Yet even any one acquainted with antiquity, who comprehends Rome, and has studied the buildings recited, their size and extent, and who calls to mind the richness of the materials employed of the most precious and costly nature, as marbles from all parts of the world, bronze, gold, ivory and rare woods, the profusion and exquisiteness of the sculptured details, besides the statues and groups, and even the paintings and fittings up of such superb structures, must be filled with amaze at the tens of millions of our money, which must have been expended.

But there is a term is this inscription, revealing one of the sources, and that is a material one, which provided the means for such a profuse outlay. "Ex Manibiis" is used several times in various sections of the Latin inscription. It shews that the spoils of war and of conquered provinces provided no inconsiderable share of the funds for the Emperor's liberality. For those distant possessions were not only victims to the private extortions of the Proconsuls or Prætors, as we learn from Cicero pro Verrem; but they had to pay vast sums into the public treasury of Rome, in order to lighten the burdens of the Roman people, and contribute to their need and to their luxuries "panem et circenses." We are not to limit our notions of all the public edifices erected during the time of Augustus to the list here given. There were other leading men, who notably raised stupendous buildings; as for example the Pantheon and contiguous Thermæ and the Aqueducts of the Julian and Virgin waters by Agrippa; not to mention the consuls and other public functionaries, who had to provide buildings for the service of the government, the administration of justice, and other necessities of the city and army.

We must admire the noble-mindedness of the Emperor and his public officers, who with a self-conscious dignity honored art and artists, a spirit reflected in the present day by the enlargement of the city of Vienna now carrying on, and by the operations at Paris within the few years of the reign of the Emperor Napoleon III. Augustus by his Prefects and Ediles did not despise the capacity and genius of their artists: they did not seek to do the least possible work at the least possible price. There is a fine French saying "noblesse oblige:" and the Augustan government did not shirk the responsibility of carrying on operations in a manner, suitable to the Roman name and to the dignity of the Roman people. They sought not popularity under the specious miserable plea of a narrow economy; as though they were administering for a pauper people with the means of a bankrupt commonwealth.

---

* This inference has been most remarkably confirmed since the above was written, by a very extraordinary Moabite inscription recently discovered on the site of the ancient Dibon, and incised upon a block of stone about 3 feet 3 inches high by about 2 feet wide. It is bilinguar, being in the original Phœnician and Hebrew characters, the words being separated by points, as in our inscription, and the sentences by vertical bars. A French translation of it has just been published in a pamphlet entitled La Stèle de Mesa Roi de Moab, par Ch. C. Ganneau, 4to., Paris, 1870, and noted by our Honorary and Corresponding Member the Count de Vogüé. The portion relating to the acts of Mesha King of Moab, who was contemporaneous with Ahaziah King of Israel, recites the following public works:

"It is I, who constructed the terrace, the walls of Ycarim, and the walls of . . . . | And it is I, who built its gates, and it is I, who constructed its fortress | And it is I, who have constructed Bet-Moloch || And it is I, who have made the two . . . . Qir | And there was no well in the interior of Qir on its terrace, and I said to all the people let every one in his house make a well | It is I, who have offered a holocaust upon the terrace (?) in . . . . . Israel | It is I, who have constructed Aröer (?) and it is I, who have made the road of Arnon | It is I, who constructed Bet-Bamoth, which was destroyed (?) | It is I, who have constructed Bosor, &c. &c. &c."

ON AUTOGRAPH DRAWINGS OF THE GREAT MASTERS OF ARCHITECTURE, PRESERVED IN THE LIBRARIES, &c. OF ITALY AND OTHER COUNTRIES.

WHEN we notice the grand works executed by the masters of our art, we are anxious to dive into the secret of those inspirations by which their minds were influenced, and to probe the workings of their genius, so as to ascertain by what means their ideas attained the perfection visible in their productions. This is a curious enquiry, and occasionally it may be a valuable and instructive one; for frequently we may mark the gradual development of a thought originally crude, containing the germs of a fine project, progressively worked out in arrangement, proportions and details, so as to become a creation worthy of its author. This may be the result of one mind, as in S. Paul's London, where the first idea of Sir Christopher Wren underwent many modifications, as is obvious in his drawings preserved at Oxford and in the Soane Museum. It was the case also of S. Martin's Church, London, for we see in the collection of drawings preserved in the Radcliffe Library, Oxford, the steps by which James Gibbs gradually improved his original, and one might almost say ungainly, design, until it assumed the imposing mass which it now presents in Trafalgar Square. Or the final monument may be the production of many successive minds, and the fruit of more than a century and a half, as was the case in S. Peter's at Rome, where the first notion of Bramante's fruitful genius, in 1505, was modified, reduced and finally enlarged by the genius of Raphael, the Sangalli, Baldassare Peruzzi, Michael Angelo, Buonarotti, Vignola, Giacomo della Porta; and at length completed, about 1650, by the stupendous circular colonnades of the imaginative Bernini, which seems to embody the idea of the Church with extended and open arms, ready to receive and embrace the whole Christian world.

The sketches and drawings of the architects often enable one to follow out the series of thoughts of such a progress, and I was anxious to ascertain, when I was lately in Italy, where any such records existed, in order to report them to the Institute. I entertained also the vague hope, that there might still remain undiscovered some hidden treasures of past ages, records of buildings of ancient nay even of more recent times, which had been swept away, leaving no other memento of them as original and valuable ideas.

ITALY.

My first researches were in the Library, now in the Ducal Palace, at Venice; but I found, that there was no collection of drawings, and only some MS. treatises of minor importance, by men of no reputation, as a certain G. Filippi, and one Giambatista Novello; or translations, especially of some of the books of Vitruvius, by D. Barbaro and G. da S. Gallo; and the titles of them were only discoverable by a painful search through MS. Catalogues, having no special references by which to guide one's investigations.

At BOLOGNA I enquired at the University, the Public Library and Academy of Fine Arts, but I was assured there were no collections of architectural drawings whatever. I have since greatly regretted, that I did not call to mind, that there are preserved in the Sacristy of the Cathedral Church of S. Petronio the models and drawings, sent in competition, of designs for the completion of the Façade. The most eminent architects of various periods have submitted projects in the styles of the successive epochs, by Vignola, Palladio, Giacomo Ranuccio, Dominico Tibaldi, Baldassare Peruzzi, Giulio Romano, Cristofero Lombardo, A. Alberto, Rainaldi, Varignani, Andrea Formigino and Francesco Terribilia. The design of this last was approved in 1580 by the Senate of Bologna, happily perhaps, never carried out. See Valery, ' Voyage en Italie.'

At FLORENCE I was more fortunate, for in the Library of the Gallery of the Uffici are forty-five portfolios and books, with 8000 architectural designs, sketches and drawings of all sorts. The folios 1 and 2 contain only the works of Baldassare Peruzzi, and 4, 5, 6, 7, exclusively those of Antonio da Sangallo the younger. More than 1000 are contained in the portfolios numbered 32 and 34. Some of the drawings are in outline, generally in bistre; others, but more rarely, in indian ink. Some are tinted in bistre or indian ink, and many shaded in red or black chalk. The subjects are various, being of plans, elevations, sections, details and perspectives, and are drawn on various sized pieces or sheets of paper or vellum, and some are tracings. Many of those, which have sculptures, figures or other ornamental details, are exquisitely drawn in with a very fine pen, mostly in bistre.

During the days I was agreeably occupied in looking through this collection and tracing some of the drawings, I had the pleasure of making the acquaintance of Herr Enrico di Geymüller, architect, of Hoefelden, near Achern, in Germany. I minutely examined with him the chief drawings. He is engaged, with a passionate and absorbing devotion for the subject, in investigating a mass of drawings relating to the Basilica of S. Peter's at Rome, with the special object of ascertaining how far the design of Bramante had been carried out, and the successive ideas, which had presented themselves to the mind of that great master. With the permission of the Signor Pini, the chief librarian, who was glad to avail himself of Herr Geymüller's special knowledge of the subject, he was permitted to collect and methodically arrange the series of drawings relating to S. Peter's, and he has published a brief description of them in a pamphlet, 8vo. Roma, 1868, entitled "Notizie sopra i progetti per la fabrica di S. Pietro in Roma," and thus the student has the rare advantage of following up all the ideas of the several architects engaged from time to time on this grand building. There is the supposed original study by Bramante, on a sheet of paper 28 long by 18 wide, lined into squares, sixteen of which equal $2\frac{3}{8}$ of an inch, a system thought to be of modern invention, and now largely used by the French. On this are drawn three plans, one over the other, in red pencil, but without any writing or figures on it, and which Herr Geymüller considers to be the original project of S. Peter's. He divides the series of drawings of fifty-three sheets into three periods. The first that of Bramante, from 1505 to 1514, in which year he died on the 11th March. The second period is that from Bramante to the death of Raffaello d'Urbino, 1514-20. The third illustrates the projects of Baldassare de' Peruzzi, 1520-1537, he having died on the 6th January, 1537. Herr Geymüller proposes to publish a Life of Bramante, for whose genius he has the most exalted admiration, and to illustrate it from the original documents existing in Florence and Rome. Such a complete analysis of the genius and works of the great master, and of the progress of S. Peter's, will be a valuable addition to the literature of our art, and I trust the author will reap the full reward of his earnest labours.

I have dwelt upon this series of drawings, which from their completeness give an idea of the value of the whole collection, among which are to be found numerous drawings by or after Antonio da Sangallo and Peruzzi, and other architects, upon various subjects; and series of graceful capitals and decorative details by one Pietro Cani, of Sienna, 1533. I took tracings from some few drawings, and now submit them to you, in order to enable you to judge of the interest, which attaches to many, although it must be confessed, that the greater number are of no value at all. Among the best must be especially noticed either the original idea or subsequent project, I conceive the former, for the completion of the Villa Madama at Rome, the design of which is attributed to Raphael, with its exquisite frescoes by Giulio Romano and Giovanni d'Udine, both of them his pupils. Little more than half of the circular court and the immediately adjoining chambers were built. Percier and Fontaine in their work on the Villas of Rome shadow out the completion; but in so mechanical and inferior a style, as to render this design most precious. It therefore forms one of the illustrations of this paper. This is a very fine illustration of those suburban retreats erected by the nobility of Rome, descendants from the

Papal families of past centuries. It is situate on one of the slopes near Monte Mario, and commands fine views of Rome, the Tiber and the Campagna. The ascending levels produced the most favourable opportunities for picturesque effects of planning. The central approach affords access to a long wide court, on one side of which are stalls for above 200 horses. The elevation of the palace reminds one of the aspect of a front of the ancient Thermæ. There is an ample open vestibule in three divisions, which leads into a circular court 130 braccia in diameter. To the right is the portion that has been constructed, and forms quite a distinct portion, with its own staircase and suite of apartments. According to the usages of past times one-half of such a palace was occupied by the prince and family, and the other devoted to the friends and visitors. To the right and left are ample courts; those to the left with flights of steps leading down to a lower level. Adjoining is an oblong court planted with trees, having a fountain in the centre and porticoes at each end. On the further side, opposite the entrance and passing through the palace, is a theatre rising up with the slope of the hill, for the representation of the masques and dramatic pieces so common in that period. In the portion which still remains, and particularly under the triple arcaded pavillon, are those exquisite fresco decorations, the delight of those who now visit these deserted spots and experience a rich succession of impressions in, as it were, a special atmosphere of art and taste. L. Gruner in his valuable work on Fresco Decorations, pl. 6 to 12 inclusive, gives admirable coloured illustrations of this "Capo d'Opera" of Italian taste and fancy. The other illustration contains four marble seats or thrones of beautiful design, drawn by P. Cani.

I cannot but notice the perfect freedom allowed by the Signor Pini, who permitted me unreservedly to trace with a pencil from the original drawings.

I should remark that to a certain degree the drawings are classified in the portfolios or books according to the subjects, as Palaces, Churches and other buildings.

Rome. When I got there I made enquiries as to the libraries, where I might probably find original architectural drawings. The Palazzo Corsini has the reputation of possessing some; but my researches there were fruitless; for the librarian assured me none existed, and that they had only MS. translations of Vitruvius; these are of little worth, as they were based upon the corrupt text of Jocundus.

I next went to the Library in the Barberini Palace, where I found the librarian not to be one of the most courteous custodi of literary treasures. He was very reticent of information, and insisted upon the most scrupulous attention to the rigorous regulation, which forbids any tracing even with a soft pencil; and he required me, if I desired to make copies of the drawings, to do so without touching them for the purpose: a restriction, that precludes rigorous exactness in the copy. The only collection of original architectural drawings in the library is the following folio thus entitled — QUESTO LIBRO DI FRANCESCO GIAMBERTI ARCHITETTO NUOVAMENTE DA SANGALLO CHIAMATO. I MOLTI DISEGNI MISURATI E TRATTI DALLO ANTICHO, CHOMINCIATO A.D., N.S., 1465, IN ROMA.

"This book of Francesco Giamberti Architect newly called da Sangello. The many drawings measured and taken from the antique, begun in the year of our Lord, 1465, in Rome." The volume consists of sixty-two folio sheets of vellum, four of which are plain or blank without any drawing. The buildings delineated on the other fifty-eight are both ancient and modern, many of the antique ones being restored. Some of the triumphal arches, as those of Septimius Severus, Domitian and Titus, are completed with a pediment as a crowning feature, and it must be owned that for this treatment there are authorities on a medal of Augustus (No. 59, Architecture Numismatica) and on arches in towns in the South of France, where the pediment is introduced although not on the summit. There are drawings of some war vessels with paddle wheels worked by hand, and picturesque views of ancient Rome with fragments of columns, &c., which no longer exist.

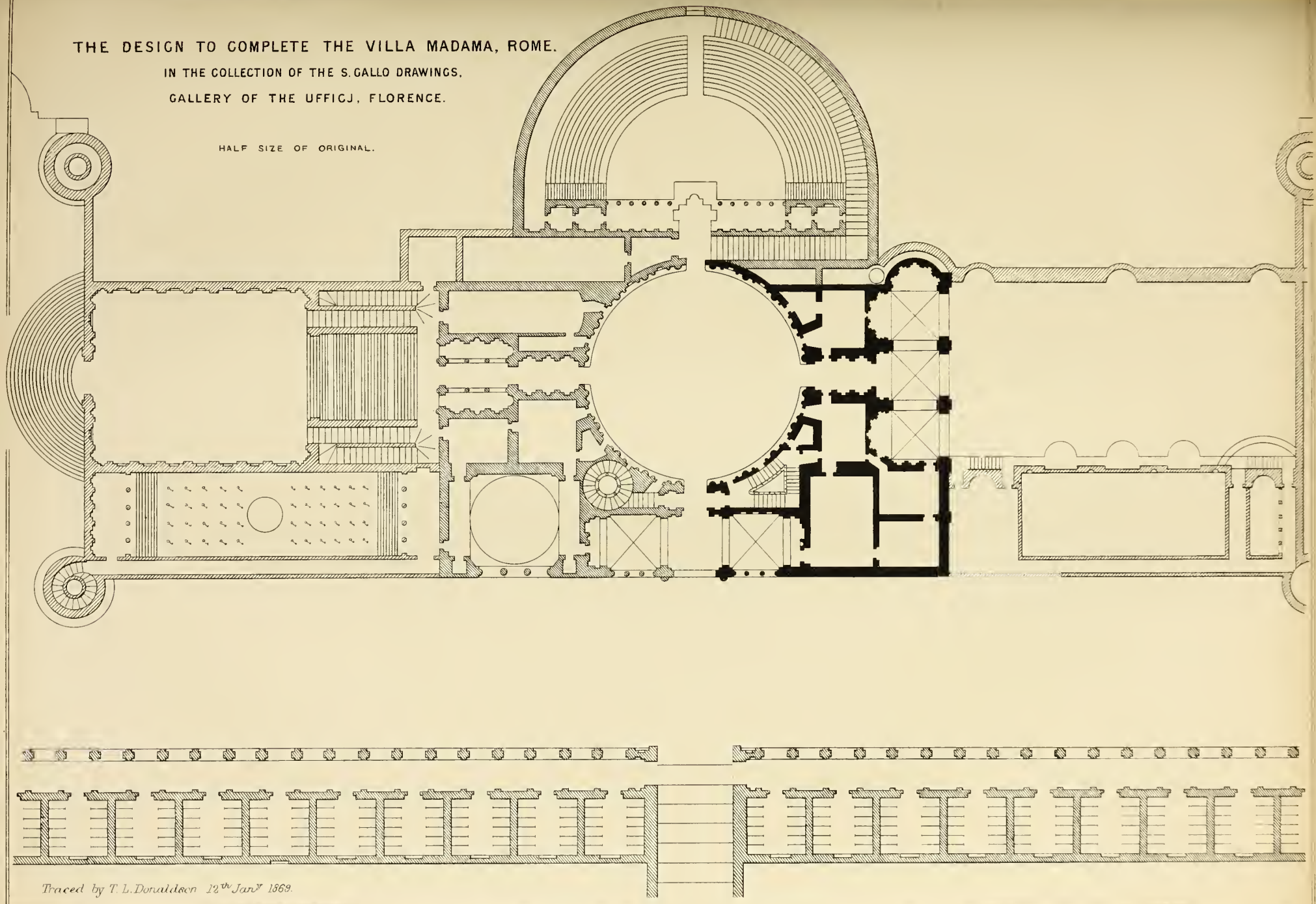
There are also plans of Greek buildings (somewhat apocryphal) furnished him, he says, by a Greek

THE DESIGN TO COMPLETE THE VILLA MADAMA, ROME.

IN THE COLLECTION OF THE S. GALLO DRAWINGS,

GALLERY OF THE UFFICJ, FLORENCE.

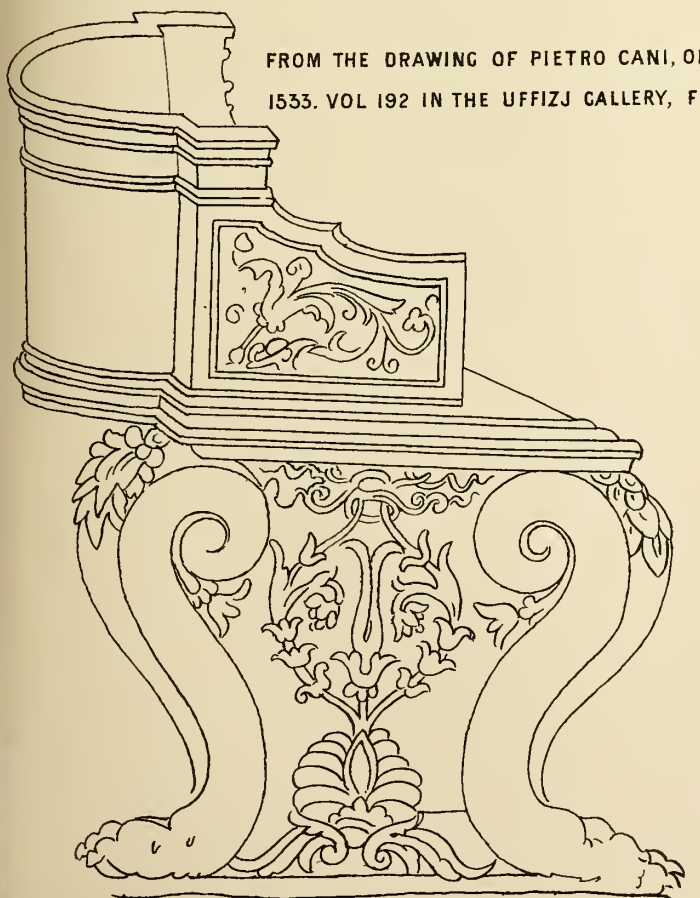
HALF SIZE OF ORIGINAL.

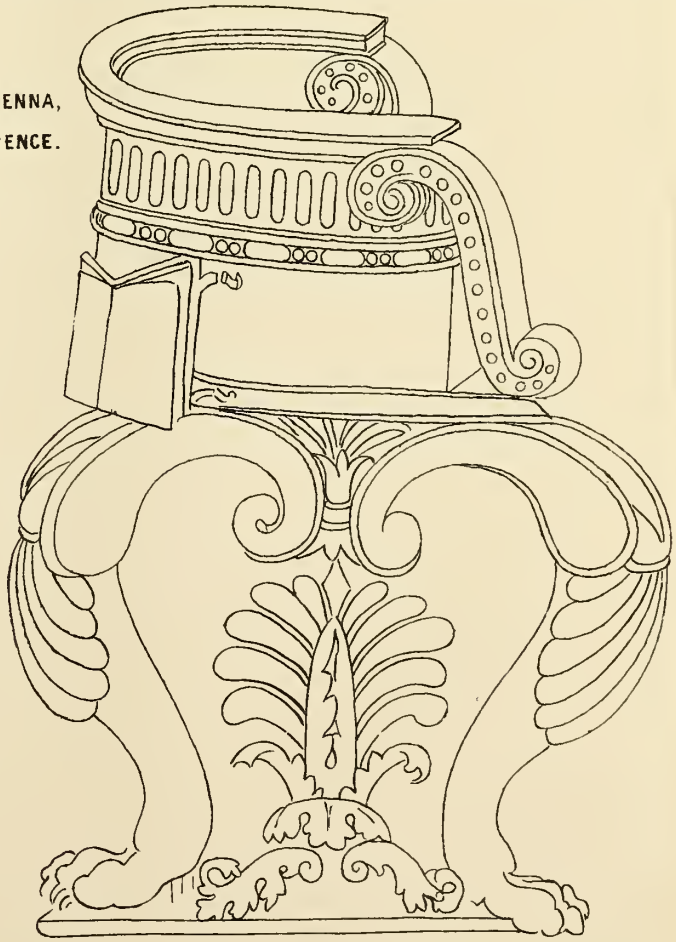


Traced by T. L. Donaldson 12th Jany 1869.

Lith for the R.I.B.A. by Kell Bros

FROM THE DRAWING OF PIETRO CANI, OF SIENNA, 1533. VOL 192 IN THE UFFIZJ GALLERY, FLORENCE.





Traced by T.L. Donaldson, 8th Jan.y 1869.

of Athens! Among these a curious and improbable plan of a circular Temple of Apollo! copied by me, and the sketch of a figure with the body of a man and the lower part consisting of a fish's tail instead of legs. This particularly attracted my attention, for in the excavations, carried on of late years, a court has been exposed, which was shown me when I was at Athens in 1868 by our Honorary and Corresponding Member the Signor Kaftangioglu. It has some eight or ten colossal figures of this same design on pedestals, as if surrounding a spacious area.

There are drawings of buildings and constructions from Epidaurus, Athens, Lacedæmon, Delphi, Aiton in the Corinthian Gulph and Cythera. There is a remarkable and ridiculous elevation of the monument of Philopappus making it convex on plan and not concave as it really is (see Stuart's Athens, vol. iii), with a quadriga below detached from the building. There are representations of many Cyclopean walls, and some very fine drawings of the sculptures on the pedestal of the Trajan Column and outlines of twenty fanciful Corinthian capitals in the cinque-cento style, like a series of the same character among the drawings in the Uffizj library at Florence.

My next enquiries were made at the Vatican library, where I had always understood that many drawings of past architects were to be found, and where I was assured by a friend, that he had seen a considerable number by Pirro Ligorio. I was however told by Monsignore Cardinale, the principal librarian, that no architectural drawings whatever existed, an assertion which appeared to me to be most extraordinary; but the rich treasures of this vast collection are acknowledged to be very inaccessible to strangers.

It is well known, that there is preserved in St. Peters the large model prepared by Sangallo, as also numerous drawings and documents connected with the fabric. But these, I learned on enquiry in the superb Sacristy, required by a recent regulation the express leave of the Pope or the Cardinal Secretary of State. My friend Joseph Severn, Esq., the British Consul, did me the favour of writing to Cardinal Gonsalvi, requesting that permission might be given me to consult them, to which application he received the following reply:—

"Illustrious Signore—With your letter of the 12th inst. accompanying the application of the Signor Donaldson, an English Professor of Architecture, and recommending its object, which was to have permission to consult the designs and models of the great Masters of Architecture, existing in the Cupola, I should willingly have complied as to his request, had I not been precluded doing so by a general and permanent exclusion, after the lamentable events of the autumn of 1867, which forbad any one without exception being allowed to go up there.

I am sorry for this circumstance, which prevents my granting the permission requested, and with sentiments of special esteem,

I am, Illustrious Sir, your faithful Servant,

G. C. Antonelli."

Rome, 18th March, 1869.

The Signor Giuseppe Severn,
British Consul in Rome.

And so ended my hopes in that quarter.

I heard, that I might meet with some drawings in the Angelica Library of the Church of S. Augustin, and which is one of the most remarkable at Rome, after the Vatican, the Minerva and Barberini Libraries; but unfortunately it was closed while I was at Rome. I went also to the Library in the Monastery attached to the fine Church of the Minerva; but there my search was in vain, for the Benedictines have no architectural drawings in their collection.

Such are the particulars which I was able to glean in Italy. These memoranda, however imperfect, may, I trust, induce others to complete the information we require by further researches. Naples may possibly possess some such drawings; and occasionally there may perhaps be found in private or public collections in others of the noted provincial cities of Italy, the centres in former times of distinguished schools of art, each with its own distinctive style, teeming with enthusiastic artists, vigorous in intellect, of rare original talents, prolific in ideas and ready with their pencil. For instance, many may possibly still be found by Palladio in Vicenza: and somewhere in Venetia a portion of the profusion, that must have been made by Scamozzi. I have seen a volume of some curious sketches at Milan by Bramante, in one of the glazed cases of the Bibliotheca Ambrogiana. In most of the Academies of Fine Arts, as at Venice, Bologna, Florence, &c. I found series of designs by those students, who had gained medals and prizes during recent years, but they are rarely of any great merit.

Having got thus far in putting together my notes, it has occurred to me, that it might be useful to complete the information on this subject, as well as I could, by including in one notice the information procurable in regard to collections in other countries and in England.

GERMANY.

At BERLIN are preserved by order of the Government the drawings left by Schinkel; and at Munich the series of studies made in Greece by the friend and fellow traveller of our lamented colleague Professor Cockerell, Herr Gaertner. He was one of the joint discoverers of the Temples at Aegina and Bassæ near Phigaleia, the sculptures of the former of which are now in Munich and of the latter in the British Museum.

FRANCE.

PARIS. It is impossible to omit notice, however casual it may be, of the noble collection of drawings preserved in the Academy of Fine Arts. It contains the matured studies of restorations of classic buildings by the accomplished travelled Students of the Institute. There is also in the department of the Minister of State the incomparable series of drawings, prepared by his order, of the Monumental Edifices of France, the result of most conscientious study of the several remains, and exquisitely rendering those " chefs d'œuvre" of past times. I have no doubt, that in the fine collection of ancient drawings, preserved at the Louvre, many rare productions of the ancient masters may be found.

LILLE. In the Museum is a curious collection of architectural drawings, I presume by Vasari, and of which I gave a description in a Paper read at our Meeting 14th November, 1853.

ENGLAND.

LONDON.—The print room of the British Museum is very rich in illustrations of Greek buildings. It is, however, to be regretted that they are not yet regularly classified and kept together, and that no special proper catalogue exists of them. I had occasion, in 1830, to consult those then possessed by the Museum through Lord Elgin, and gave a list of the drawings in the note to my description of the subterranean chamber at Mycenæ, p. 28 in the fifth, or supplementary volume to Stuart's Athens. Besides those, I now find that important additions have been since made by the Dilettanti Society, and others. There are eighty-one drawings by W. Pars, 1764—1767, twenty-three of the views being mounted on boards, and fifty-eight in a volume, also one volume of sixty-one drawings of sculptures of the Parthenon, tinted in sepia, one volume of the original drawings for the Ionian Antiquities, published by the Dilettanti Society, one volume of copies of the 44 drawings originally made by Carrey, (who died in 1726, aged eighty years,) by order of M. Nointel, the French Ambassador at the Porte, before the Parthenon on the Acropolis was damaged by the bomb of the Venetians. They are executed

in red chalk and black-lead pencil, and are very precious, as shewing many exquisite figures of the pediments, which then existed and now are lost. There are also three drawings by Wolfenberg. There is one folio of twelve plans, elevations and details to a large scale, beautifully made out of the Parthenon and other buildings in the Acropolis and Sicily—I presume by Lusieri, or his assistants; one volume of eighty-four loose sketches by Ittar of Catania, who was employed by Lord Elgin; one box containing thirteen volumes and a parcel of loose sketches of Sir W. Gell, principally in Greece, but also some of other places through which he passed. The views are of towns, ruins, landscapes, inscriptions, mixed up with some few by other hands; one is a very fine sketch by Gropius, the Austrian Consul at Athens, consisting of a group of priests and Greeks in the court of a house. One of the volumes relates to the Alhambra, many of which are by other artists. Sir William Gell was an indefatigable worker; while his architects or companions were employed upon the buildings, he sketched the scenery around or special features, and took the bearings of the prominent elevations of mountains, and bits of walling, &c. Some are in mere outline, others carefully shaded in lines. Although by no means a brilliant artist, he was a very pains-taking exact draughtsman, and employed the camera lucida to a great extent. His vast stores of knowledge were at the service of every traveller and enquirer. Amice vale! Among all these drawings there are many containing authentic original matter, which has never been published.

In the department of Oriental Antiquities, under the care of Mr. Birch, are six volumes of the fine original drawings of Assyrian Antiquities, prepared for Layard's noble work on this subject, by himself, Boutcher and other artists, exquisitely rendered, and one smaller volume of illustrations, ably drawn by Churchill. In the department of Greek and Roman Antiquities are the drawings prepared for Sir C. Fellows' work on Lycia, Caria and Lydia, by Scharf. Being thus distributed through various departments of the establishment, these precious treasures of art escape the researches of many, however great may be the courtesy of the keepers of these records to show them, *when asked for*.

I owe to the intelligent and kind suggestion of Mr. Wyatt Papworth the knowledge of the fact, that there is a vast mass of very important and valuable drawings, prints, &c. of a topographical and structural character in the Book Department of the British Museum, and which I have examined. The titles of the subjects are given in the special "Catalogue of the MS., Maps, Charts and Plans of the Topographical Drawings of the B. M.," 8vo. London, 1842, 2 vols. They are classified topographically, according to Counties, Towns and Parishes; but it is to be regretted, that there is no index of the names of the Artists and Draughtsmen, which is indispensable for those whose researches are primarily directed to the persons. London is very richly illustrated, as *e. g.* complete series of drawings of Hawksmoor's Churches—Limehouse, Bloomsbury, Spitalfields, S. Mary's Woolnoth, and of Flitcroft's S. Giles. There are drawings by T. Sandby, Nash, D. Alexander, Architect, and the Rev. Thos. Kerrick, who appears to have been as indefatigable a sketcher, as our late lamented Hon. Member the Rev. Mr. Pettit. And the Counties have the like useful records. With a nominal index this catalogue would have its usefulness vastly increased, and it is to be hoped the principal librarian will have that prepared, as it can now be done with little difficulty.

The SOANE MUSEUM, in Lincoln's Inn Fields, has a very fine collection of original architectural drawings of buildings in every country on the globe, and which I have been enabled to examine thoroughly, through the courteous kinduess of its Curator, Joseph Bonomi, Esq. In fact, there are about one hundred volumes of drawings, besides those contained in portfolios. I shall commence my notice by reference to three volumes of sketches and exquisitely finished drawings in outline, collected for publication by the late E. Dodwell, Esq., the well-known traveller, archæologist, and author. They were presented through the late Sir A. or Lady Crichton to Sir John Soane, in 1834; some bear the date

of 1809, and others of 1831. Various of the free-hand sketches seem to have been made by Mr. Dodwell himself, and the rest are by Italian artists employed by him. Most are by the Signor Vespignani, the distinguished architect of the present Pope, and honorary and corresponding member of this Institute. Two of the volumes illustrate Cyclopean walling principally in Italy, and also Etruscan edifices, as tombs, city gates, &c.; and the third has very fine coloured representations of the buildings of Pompeii and the regions about Naples, and in Calabria. After Mr. Dodwell's death, a volume of Cyclopean or Pelasgic remains was published without text; it is now out of print. Those were by another Italian artist, and consist of views only, freely treated, but very accurate. The original drawings of these do not appear. One volume contains illustrations of the Trajan and Antonine columns with the sculptures drawn and shadowed in sepia, by Caldari, otherwise called Polidoro Caravaggio. One volume of thirty-six drawings of the theatre Tor di Nona, Rome, by the Cavalière Fontana, with his signature attached to each; and another of drawings of the Coliseum, with plan, elevation, section, and its restoration by Fontana, and design for a chapel and cloister to occupy the whole of the arena. Drawings by Vasari, Panini, Bibiena, and by Fr. Piranesi of temples at Pæstum. Fifty-five volumes of original drawings by the Adams brothers, and the artists employed by them, and containing designs for the Law Courts, Palaces, Houses of Parliament and other buildings, and particularly for erections on the east side of Lincoln's Inn Fields: some ceilings by Richardson and Manocci, designed or drawn by Italian artists for the Adams', and details of plate, furniture, &c. One volume, by James Gibbs. Several packets of different parts of Somerset House, by Sir W. Chambers. One volume has fine plans, elevations, and sections of Hampton Court, with original designs thereof, attributed to Wren, and drawings of Greenwich Hospital, as originally designed by I. Jones, and enlarged and added to by Wren; and original project for S. Paul's Cathedral by Sir Christopher Wren, many containing his autograph notes and dimensions. There is also the court order book of Sir Christopher, with various documents, bills, and accounts, to which his signatures are attached; but whether they are original or copied, it is difficult to decide. One volume by Hawksmoor, and one by G. Dance and his father, with miscellaneous drawings of the Mansion House in the City; a volume of J. Thorpe; two volumes by Thomas Sandby; drawings by Tatham and Playfair; also a volume of Mexican antiquities, prepared by Mühleupfordt for publication. Besides a numberless mass of drawings made for Sir John Soane himself by his pupils, Joseph Gandy, G. Basevi, G. Bailey, and other artists of his own buildings and projects, there are four large folios containing drawings of the Bank of England, and which are very fine and effective. In fact, there is a profuse mass of striking matter and authentic documents in this collection; most of it unpublished, and much that deserves to be more known. It is to be hoped, that the Trustees will, without further delay, publish a catalogue, and thus render these treasures more available for public inspection and study. From want of this, they are at present unappreciated and seldom alluded to.

The Dilettanti Society of London possess a valuable series of the beautiful original drawings of Greek buildings, made for them by P. Gandy Deering and Bedford, afterwards engraved in their volumes of antiquities. There are also numberless sketches by their colleague, Sir W. Gell, and more recent drawings by Mr. Pullan, of the Temple at Teos. It is to be regretted, that these fine productions of artistic skill are not more carefully arranged and bound up together, and deposited in the library of the British Museum, to complete the series already there—the gift of this enlightened Society, who by their researches and publications, have rendered such essential service to Architecture, and at great outlay, have carried out most important researches in Asia Minor and Greeia propria.

I must also call attention to the very important series of paintings, drawings, photographs and models of buildings in our Eastern possessions, preserved in the Indian Offices, Downing Street, and to which very important accessions are being constantly made by the enlightened policy of the Secretaries of State for India, the Council and their officers, who afford every facility for their inspection.

In the Duke of Devonshire's Palladian Villa at Chiswick, there is the most interesting collection, made by Lord Burlington, of Palladio's drawings: a catalogue of which, drawn up by Mr. A. Poynter and myself, is in the library of this Institute, dated 17th November, 1845.

OXFORD.—There are, at Worcester College, fifteen drawings, mounted on rollers, and thirteen on sheets, of Inigo Jones' design for Whitehall Palace. And at All Souls' College, three volumes of Sir Christopher Wren's drawings, a catalogue of which was drawn up by Mr. James Elmes. And in the Radcliff Library, which was designed and built by James Gibbs, there are many original drawings by him of St. Martin's Church, and of his other buildings. A catalogue of these collections is at Oxford, and a copy exists in the library of this Institute, drawn up by G. Gutch, Esq., Fellow, and dated, 6th February, 1836.

I cannot conclude this imperfect summary without calling the attention of our members to the valuable series of admirable original drawings existing in our own library, and too generally unknown, although they are briefly noted at the end of our Catalogue, page 159. There are original sketches of Chambers and his pupil Yenn; A. Leclère's series of the Portico of the Pantheon at Rome; J. M. Lockyer's forty inimitable coloured drawings of Mosaics, Floors and Marble Inlays; Henry Parke's masterly drawings of Egyptian, Grecian and Sicilian Buildings, measured from the monuments themselves; Athenian Stuart's Sketch Book; Joseph Wood's twenty-eight original drawings in France, Italy, &c., and series by D. Mocatta; and of plans, elevations, sections and details of Turkish and Early Christian Buildings by M. Texier; others by J. J. Scoles, Jas. Savage, H. L. Elmes, Pugin, Thos. Little, &c. &c. Our diligent librarian is now engaged in arranging them, and we may expect to be furnished ere long with a complete catalogue.

I must express the hope that those, who are connected with architects, will, as they pass away, use their utmost influence to induce the friends and relatives to enrich our stores by some contributions of their drawings, in order to render most complete such mementos of their skill and genius, and thus add to the memorials, which form the basis for the history of our Professional Worthies.

THOS. L. DONALDSON.

AN INDEX TO THE DRAWINGS IN THE MUSEUM OF SIR JOHN SOANE,

(I. BONOMI, CURATOR).

Adam, J. and R., Architectural, 1756-94	Vols. 27
Adam, Jas. (?) Decorative	28
Adam, Robt., Landscapes for Panels	48 drawings
Bailey, G., Pupil Drawings	unbound
Basevi, G., Pupil Drawings	unbound
Bedford, Architectural	1
Belanger, Architectural, 1766 (?)	unbound
Bibiena, Scenes for Theatres	framed
Brettingham, W., Architectural	1
Caldara, P., Colonna Trajana	1
Capon, W. London Antiquities	Pennant
Chambers, Sir W., Somerset House	many packets
Chambers, Sir W., various Architectural	many packets
Coneri, A., Disegni, 1500	1
Cooper, G., Llandaff Cathedral, 1808	
Dance, G. sen., Newgate, City Churches	7
Dance, G. jun., Architectural	a cabinet full
Dalton, R., Views in the East (very poor) 1791	1
Devis, A., Sketch Book, 1815	1
Disegni Dell' Architettura, 1400 (?) vellum	Vol. 1
Dodwell, E., Grecian Remains, 1809-31, by Vespignani	3
Drake, Plans of a House	1
Fontana, C., Teatro Tor di Nona	1
Fontana, C., Anfiteatro Flavio	1
Fortification, Illustrations of Italian 17th Century (?)	1
French Artist's Studies	1
Gandy, J., Architectural, 1798-1800	1
Gandy, J., Soane's House and Museum, 1825	1
Gandy, J., Soane Sarcophagus, 1826	1
Gibbs, Jas., Remarks on Buildings in Rome	1
Gisleni, G. B., Varii Disegni dell' Architettura	1
Gribelin, S., Traité d'Architecture	2
Hawkesmoor, N., Architectural	various
Hindu Costumes	1
Italian Designs	1
Italian Views, by Italian Artists	1
J. B. J., Textile Designs, 1740	1

Jones, Inigo, Architectural	a few
Jones, I., Translation of Scamozzi, ascribed to	Vol. 1
Langley, B., Saxon Architecture	1
Lecture Drawings, Royal Academy (very large)	about 650
Lecture Drawings, Royal Academy (smaller)	about 350
Machines, Drawings of	1
Manocci, J. G., Arabesques (Adams)	2
Martin, J., a Treatise on Painting (1690)	1
Major T., Ruins of Pæstum, 1768	1
Montana, G. B., I Sette Libri dell' Architettura	1
Montana, G. B., Tempii	2
Mühleupfordt, E., Mexican Remains, 1832	1
Nash, F., London Antiquities	Pennant
Nollekins, I., Monuments	1
Ornaments, Italian	1
Ornaments, Ancient Friezes	1
Ornaments, or Designs for Dutch Gardens, vellum	1
Parke, H., Pupil Drawings	1
"Pensées," French Drawings and MSS.	1
Persian Costumes and MSS.	1
Perspective, a MS. and Drawings, by F. O. (?)	1
Piranesi, Francesco, Framed Drawings of Pæstum	
Playfair, J., Architectural, 1787	1
Reveley, W., Tracings	1
Reynolds, Sir J., Sketch Books	2
Richardson, G., Ceilings (in Adams)	various
Roubillac, Monuments	a few
Rysbrack, M., Monuments	a few
Sandby, T., Architectural Designs	Vols. 2
"Sborriato," Historical Sketches	1
Schumacker's Monuments	a few
Soane, Sir J., Bank of England	4
Soane, Sir J., Law Courts	cabinet full
Soane, Sir J., Parliament House	cabinet full
Soane, Sir J., Chelsea and Board of Works	6
Soane, Sir J., Private Houses	4
Shepherd, J., London Antiquities	Pennant
Sampson, G., Bank of England, 1732	1
Stone, H., Sketch Book, 1638	1
Stone, N., Italian Sketches, 1648	1
Stukeley, W., Sacred Antiquities	4
Tatham, C. H., Roman Sketches, 1757	1
Tatham, C. H., Tracings and MSS., 1794-6	1
Thorpe, John, Architectural, Time of Elizabeth	1
Turner, C., Drawing of Soane Bust	1
Tesi, Lud., Arabesques (Adams)	1
Vespignani, V., Grecian Remains (Dodwell)	3
Wren, Sir C., Architectural	2
Wren, Sir C., Court Order Book	1
Zucchero, F., Bibbia Sacra	1
Zucchi, Framed Drawings	

Excluding many Miscellaneous Sketches not yet classified.

After some remarks from Mr. PAPWORTH, Fellow, and other members, during which attention was called to the collection of architectural drawings in the "King's Library" of the British Museum, and to the Egyptian drawings made by Mr. James Burton, who travelled with Bonomi in 1832-3,

SIR DIGBY WYATT said:—Having examined with a good deal of care the interesting designs preserved at Bologna for the façade of the splendid Church of San Petronio in that city, which seem in some unaccountable way to have escaped Professor Donaldson's usual extraordinary and all-comprehending diligence, I may be permitted to bear my testimony to their excellence and interest. With the work of Palladio, I am bound to confess, I felt disappointed. I found his scheme to be largely conceived; and the architectural leading features very carefully proportioned, but drawn with a heavy hand, animated apparently by little imagination. In all those parts in which usually the greatest demands are made upon an architect's invention, and in those ornamental characteristics which most call for skill and exactness in the draughtsman, Palladio in these drawings shows himself as by no means a ready designer. [Professor DONALDSON. In the human figure.] Not only in his treatments of the human figure, but in the combination of sculpture generally with architecture, Palladio shows a feebleness very uncommon with most of his leading contemporaries. Even the regular architectural members are not well drawn, although their proportions are very good. Some designs by other architects, though not so bold in conception as those of the Palladio, are far better in point of drawing, and in the exhibition of that special knowledge by which alone, in this case, the beautiful sculpture by Della Quercia and others, which already adorned the chief doorways of the façade of the church, could be appropriately framed. According to the best of my recollection, Vignola's design was far better than Palladio's, and the finest of the series was the one by Francesco Terribilia, which was approved ultimately

by the Senate. I have also examined with care the collections at Florence alluded to in the Professor's most interesting paper. In these as might be expected more attention appears to have been paid to ornamental drawing. The Renaissance architects of Italy were often designers for every variety of industrial art, as well as in many notable cases painters or sculptors—especially such men as Pierino del Vaga and Montorsoli the Florentine, whose united talents were exerted upon the creation of the celebrated Villa Doria, at Genoa. They were magnificent draughtsmen, and drawings especially by the former, are preserved in great numbers at Florence and elsewhere. Others, such as Cremonini, Marco da Faenza, Campi and Aspertini were great masters of ceiling drawing, and their sketches and plaster details are perhaps the finest I have seen anywhere. Bramante, to whom Professor Donaldson has specially alluded, was a masterly draughtsman; and so were Baldassare Peruzzi, Francesco Salviati, the Zuccheri, Prospero Fontana, and "Nicolo Abbate" and the brilliant artists who came to France at the invitation of Francis I., and influenced the whole school of architectural drawing of that country. In England there are one or two sets of very interesting drawings which may have escaped Professor Donaldson's researches. One is a very valuable set by Rubens, which were in the possession of the late Marquis of Bredalbane, and which comprised, when I saw them shortly before the Marquis's death, a number of fanciful designs for wood and stone carvings and house fronts and for steeples, some of the last-named being of a most curious kind. He seemed to have been constantly thinking of the Cathedral of Antwerp and its spire, and turning its mediæval in renaissance detail. There is also the beautiful little pocket book of Inigo Jones in the possession of the Duke of Devonshire, which was printed by the predecessor of the present Duke for private circulation among his friends. I enjoyed an opportunity of examining carefully the copy given to the grandfather of the present Duke of Hamilton, and was delighted with the little volume, which is now very rare. As we do not possess a copy of it I think it would be most desirable some day to petition the present Duke, if he should have any of the impression left, to favour the Institute with the donation of this little gem, which is a perfect facsimile, even to the binding, of its precious original. [Professor DONALDSON. There is a copy of it in the British Museum.] It is a book which we should certainly have in our library. There is another set of drawings in the British Museum extremely interesting now to architects, and which will every year become more and more so. I allude to the collection of drawings by Mr. George Scharf's father of old buildings in London. They comprise illustrations of the topography of London in all directions and record numbers of buildings and aspects of streets which are every day disappearing. These are some of the few points which suggested themselves to my mind as possibly useful addenda to the learned Professor's paper, and I am sure my respected friend will forgive me for having mentioned them. Before sitting down I would willingly propose a hearty vote of thanks for the two papers with which Professor Donaldson has favoured us this evening; but I can, unfortunately, only propose half a vote, since it was not my privilege to hear more of the first of the two contributions than a few words of its conclusion. From the plaudits with which it was received I cannot doubt that plenty of the members present will be ready to make up for my shortcomings. In such case my "moiety" may be looked upon as contributed most willingly. Before sitting down I would venture to remind some of those who may have forgotten the fact, that in this Institute, we possess a volume of original drawings by Italian architects of considerable interest. Amongst them are some valuable drawings attributed to Bernini, Bibiena, Borromini, and other clever and facile Italian architects and designers. There is also a very interesting sketch of the interior of St. Peter's with the cross lit up. It is altogether a capital book, full of spirited and valuable drawings, and is well worthy the attention of students. In our portfolios, too, we have many of the works of the Italian draughtsmen, who drew ornaments for Adams and Chambers; and some of their arabesques are exquisitely sketched.

Professor DONALDSON.—I should say that I have avoided archæological drawings altogether. It would open such a wide sphere that I have adhered to architectural drawings alone. Among the collection in the British Museum, there are many monumental drawings of London and other parts, but to have introduced these would greatly have enlarged the sphere of my paper, and I therefore thought it better to limit it to works of a purely architectural character.

Sir DIGBY WYATT.—I alluded particularly to Scharf's drawings as furnishing records of many buildings that have now entirely passed away. It is wonderful in how short a time the whole architectural aspect of a city may be almost entirely changed, and the bulk of its monumental landmarks disappear.

The vote of thanks to Professsor Donaldson having been seconded by Mr. WYATT PAPWORTH,

The CHAIRMAN, in putting the vote of thanks, said:—The subjects treated of in the first paper are novel to me, but they are of considerable interest, and may be regarded, I am sure, as authentic records and additions to our knowledge of the history of past times. One thing struck me very much, viz., that in one town Augustus should have built no fewer than eighty temples (Professor DONALDSON. In Rome). Even for the city of Rome it was an enormous number, and I can only imagine that some of them must have been of a temporary and ephemeral character. The records laid before us this evening bring to light the savage usages of the Roman people, and though in some respects they may have been equal to us in appreciation of art, it is quite certain we have greatly advanced beyond them in civilization. My friend will excuse me doubting whether a parental government like that of Augustus is always the most favourable for the production of the greatest and noblest works. We may point to times in our own history in which, without the intervention of any great government, we have produced some of the noblest and most enduring works which the world has ever seen—not so full of art perhaps, but in durability and greatness never surpassed. With regard to the second paper, I am quite sure it has been a labour of love with Professor Donaldson, who never omits any opportunity which presents itself for extending his researches into the history of our art, which he always presents in a manner agreeable, instructive, and even entertaining to us. I am sure the motion which I have now to submit will be agreed to with the utmost cordiality.

The vote of thanks was unanimously accorded, and the meeting adjourned.

Royal Institute of British Architects.

At the Ordinary General Meeting, held on Monday, the 28th day of March, 1870, CHARLES BARRY, Vice-President, in the Chair, the following Papers were read :—

MEMOIR OF THE LATE WILLIAM BURN, FELLOW.

By Professor DONALDSON, P.P., Hon. Sec. For. Corr.

WE have recently lost, by the death of Mr. William Burn, one of the earliest members of our body, he having joined the infant Institution in 1835, now thirty-five years ago; he was one of the Nestors and most highly respected members of our profession, and the last of a generation of Scotch architects, who may be said to have been represented by Thomas Hamilton, William Playfair, Gillespie Graham and himself. It is an old remark, that the memory of an artist or an author most generally rests with his works, so few are the striking incidents, that occur to men in such pursuits. And happily so! For then is a man able to concentrate his faculties and his feelings undisturbed, except by the ordinary cares to which everyone must be subject more or less; and thus he can carry out into realisation his inspirations as a writer, an architect, a painter, or sculptor: whereas his powers must be materially affected if he be harassed by party conflicts and passions, or by an uncontrolled or too sensitive temperament or mental alienation, which disturbed and overthrew the equilibrium of a Blake, the painter Barry, or a Haydon. Our friend was spared the wild distractions of such vicissitudes, and with a calm judgment, firm will and considerable wisdom, held on his way, looked up to and valued by his neighbours, his friends, and the profession. There is something to be gained by the contemplation of such a character, and a lesson to be learned in considering the works, which proceeded from such a mind. Brilliant episodes I have none to offer, but the simple recital of the calm common-sense career of a professional brother.

Mr. Burn was born on the 20th December, 1789, in Edinburgh; and the name of that Northern capital of the British Isles, and at that period, gives rise to many reflections. It has been called the Modern Athens, and not without reason, whether physically or intellectually considered. Athens rises out of a plain, its citadel crowning the summit of a rock, with its noble Parthenon, which shows itself majestically to widely distant points around. It is bounded by considerable hills, and four or five miles off is its port of the Piræeus, an indentation in the shore line of the Æginetan Gulf. And within no large circuit it has witnessed many a bloody conflict with Greeks and Persians, for its own supremacy or the liberty of the whole fatherland. The old town of Edinburgh, in like manner, is situate on the middle of a ridge, on the highest craggy precipitous point of which stands its Castle, which can be seen with its varied outline from far as a proud and commanding object in the landscape. At the distance of two miles lies the harbour of Leith, on the bank of the Firth of Forth, an inland gulf as that of Ægina. Such are the corresponding physical features. And as Athens intellectually ruled the literature of Greece, and as its poets, its orators and its writers gave it a high renown in antiquity among the rival and highly cultivated Doric and Ionian states, so Edinburgh, in the first quarter of this century, could vie for brilliancy of literary reputation with the old institutions of England and its scholastic foundations, and attracted men of the highest talents and energy of purpose. Such were David Hume, Dr. and Adam Black, Principal Robertson, Hugh Blair, J. Playfair, Dugald Stewart.

And it could originate an Encyclopædia, and periodicals such as the "Edinburgh Review" and "Blackwood's Magazine" with its famous Christopher North. And its university has sent forth men of the bar, as Macintosh and Brougham; and those of varied powers, as Jeffrey and Sir Walter Scott, Cockburn, Professor Wilson, Tytler the historian a choice and loveable man, Lord Chief-Justice Clerk, Lockhart, Peter Robertson, Thomas Chalmers, Sir D. Brewster,—sparkling men of the day, and recognised as such here in the South.

Such a reference is not without its point; for it was in those stirring times of intellectual progress and among men of like high attainments, that Mr. Burn was born and passed his early years. Himself a decidedly pronounced man in politics, and particularly of the then dominant party of the Tories, he mixed in social life and was on terms of intimate friendship with men of all parties, whether Whig or Tory, receiving them at his hospitable board, where, as the poet says,

"His humour was baith frank and free,"

for no one could tell with greater spirit many a good story about the auld Scotch lairds and their vagaries.

Mr. Robert Burn, the father of our Fellow, united the occupations of builder and architect, one of his works in the latter capacity being the Nelson Monument of the Calton Hill, which by a little artistic treatment might be rendered worthy its prominent position and surroundings, for in the mass it is an important object. Anxious to afford his son the best professional education, for which there were then few facilities in Edinburgh, he sent him up in 1808 to the then Mr. Smirke, afterwards Sir Robert, and who divided with Mr. Soane, afterwards Sir John, the supremacy of architectural practice and taste. He remained with him three years, was one of his earliest pupils, and subsequently joined by C. R. Cockerell and Lewis Vulliamy, both well known to fame. Under his master he had the opportunity of studying the soundest construction in various important works then carrying on, as at Lowther Castle and Covent Garden Theatre, rebuilt by John Kemble, the celebrated tragedian, after a fire.

In his earliest productions, Mr. Burn seems to have been influenced by the strict Grecian taste of Sir Robert; but in his later ones he availed himself of the utmost liberty, without however transgressing what might be considered correctness of treatment, freed from slavish adherence. And this is the just freedom which every architect should claim, if he has any pretence to independence and originality; and it is by the proper or improper use of this liberty of action, that his reputation must stand or fall.

His earliest important work seems to have been the Custom House at Greenock, about 1816, and being then well launched in his profession, with every prospect of success, he was united in marriage to Miss Macvicar, with whom he passed fifty-four years of happy wedded union,—his partner in weal and woe, and to whose tender and devoted attentions he owed so much during a long season of suffering in the later period of his life. For twenty-eight years he pursued a brilliant career in Edinburgh, patronised by the highest nobility and aristocracy, and devoting himself specially to domestic architecture. And so successfully did he study the peculiar conveniences of that class of building and mansion-house architecture, by new combinations of comforts in the residences of his patrons, that he became the almost exclusive designer of the country houses for the nobility and gentry throughout Scotland.* Finding his business thus increasing and his reputation extending in England, he associated with himself

* This system has been ably illustrated in a work entitled, "English Gentleman's House," 8vo. London, 1865, by our Fellow, Mr. R. Kerr, and in which he recognises the special ability of his countryman, Mr. Burn.

Mr. David Bryce our Fellow, who has since erected many fine buildings in Edinburgh and elsewhere. At length in the year 1844 he settled in London, Mr. Bryce succeeding, to a great extent eventually, to the Scottish connection, and Mr. Burn henceforth practising principally in these parts.

It is impossible to avoid noticing, as a characteristic feature of our friend, the deep and loyal interest, which he took in the antiquities of his native country. The early domestic architecture of Scotland forms at once the most picturesque and striking objects in the scenery of that land; and the massiveness of its construction has ensured it a perpetuity, which can scarcely be matched in this. There is hardly a county, where the traveller does not meet stone-built towers, on the shores of the lochs or on the crags of the mountain side; baffling the stormy elements, as surely as the very rocks on which they solidly rest; and combining with the trees and foliage of the scenery, carrying the imagination far back into Scottish history and its feudal times. Then the dwelling of the farmer and the palace of the chieftain was unsafe—nay, even the very church itself; unless it had the solid strength and surer military arrangement, to resist the attack of clan against clan. There is the solitary, sturdy, rude peel or tower house or keep of the border; in form, a square frowning mass, its entrance-door high above the ground level; with its single room and occasionally a small closet in the angle on each floor, and the winding newelled stone stair from bottom to top—and of which Clackmannan Tower (see Billings' 'Antiquities') is a good example. Or there is the more pretentious Castle, of the fifteenth century, with its large hall in the centre, and two or three smaller chambers, with ribbed vaultings and its winding staircase, and large angle towers, with the pepper-box turrets of the upper floor, its high-pitched roofs and gable ends, often corbied or stepped, and its attic gabled dormers, giving a wildly picturesque and almost fantastic outline. Of such a class is Glammis; prior to the additions made to it by James Wyatt, about the beginning of the present century; or Castle Huntley in Perthshire, and others with their walls sometimes ten feet thick. Coming down to a later period, we have Linlithgow Castle, with its mixture of Tudor and Renaissance; and Falkland and Crichton Castles, with their more debased details of the time of James, and having the ample courts, dressed window openings, elaborate yet rude cornices, fine chimney pieces, and lofty chimney shafts highly decorated, making a busy grouping on the sky line.

All these architectural features are distinctly different from our own, and we recognise a foreign influence—more probably French; where we have a similar feeling of general treatment with greater elegance however; for the Scotch architecture of these periods, seems to be an importation, carried out in detail with grosser feeling, and executed by ruder hands. These instances of his country's architecture were familiar to Mr. Burn, who seems to have studied them with peculiar attention, and they appear to have formed the turning point of his taste and practice, and were by him often adopted with great success. This naturally led to the desire of seeing them illustrated in the same manner, as the antiquities of England had been by Britton; and between 1848 and 1852 appeared the volumes of Billings' 'Baronial and Ecclesiastical Antiquities of Scotland': carried out by the combined taste, intelligence, and spirited enterprise of the three B's—Billings, Burn, and Blackwood—the artist, the adviser, and the publisher. It is a most valuable contribution to the history of architecture, as well as to the archæological traditions of the north. This fine work consists almost entirely of views from points judiciously selected, and spiritedly drawn by the effective pencil of Mr. Billings. It is to be hoped that it will be eventually supplemented, as was originally intended, by another containing plans and other strictly architectural features. It is understood that its publication was mainly set on foot by the generous advance of £ 1,000. by Mr. Burn.

The list appended to this paper contains the principal works, out of the seven hundred he executed, during his long career, and consisting of public and private buildings, in every style of art, and in almost

every county of the three kingdoms. Many of them are of vast extent and great cost, and none of them insignificant. He sketched with great accuracy and neatness, and following the example of his master, Sir Robert Smirke, he in his earliest works at least drew out the plans with the minutest accuracy, dimensioning with his own hand every part and detail with peculiar clearness, so as to afford no excuse to the builder for any mistakes or blunders. He was untiring in his endeavour to meet the wishes and tastes of his employers, and he has shown me numerous sketches of subjects, varying in plan, and even in style, to realise their wishes—nay caprices; and with rare ability and perseverance he would change and modify, until he had effected his object.

He was a man of the highest honour, integrity and independence; and so far from leading his clients into needless or extravagant outlay, he would demur to any unnecessary expense or an expenditure beyond his employer's means. And it is well known that, being required to prepare designs for an useless and costly object, by one of our leading nobility long since deceased, one of princely fortune, but who had an extravagant passion for building, he purposely delayed beginning and appealed to the son to advise his father to give up the intention. He never engaged in competition, being averse to incur the struggle of such contests with his professional brethren, and shrinking from the disappointment and annoyances attendant thereon. Conscious of his own position, indifferent to praise and not caring to subject himself to the undiscriminating judgment of incompetent critics, he never exhibited nor published any of his edifices. After his earlier years, he did not undertake large public buildings, but he occasionally acted as judge and referee in government matters: and held for many years the appointment of Consulting Architect for the Government in Scotland. He followed the sound principle of Vitruvius, "*not to seek employment, but to wait till he was sought;*" and this he could safely do, for you will see by the list appended, how each year brought fresh and numerous engagements, and left him few intervals of rest. In many instances he handed over to younger professional friends commissions offered to himself. He was frank and plain spoken, occasionally even to roughness; no flatterer; prudent in counsel, and firm in his opinion when once formed. He was somewhat impulsive, and gifted with great shrewdness and common sense, yet with strong prejudices, and intolerant of what is familiarly, yet not very elegantly, called "*humbug.*" I have the testimony of Dr. Cumming, of whose congregation he was a member, that he was heartily attached to the Established Church of Scotland, and indicated that attachment not only by words but by deeds. He had a slight figure with a strong constitution, till within a few years. Rain, snow, or frost, never kept him in; and up to eighty, Dr. Cumming says, he only once saw him wear an overcoat: and that must have been on some very piercing day late in the afternoon, when he usually took his constitutional walk in the park. His finely profiled head and piercing eye, and well-defined features, are powerfully shown in the expressive bust modelled, thirty years ago, by our mutual friend, the late Thomas Campbell.

The mansion of the Duke of Buccleuch, in Whitehall, may be quoted as an instance of Mr. Burn's individual taste, and of the manner, in which he could meet the requirements of his client, and give dignity to the town residence of a nobleman. It is in striking contrast with the hitherto generally mean and graceless box-like character of the usual London house of our nobility and gentry.

He died on the 15th February, aged eighty, leaving his widow, two sons and a daughter to survive him: and was buried in the Kensal Green Cemetery; his body being attended to its resting-place by his relatives and many attached friends and connections, who sincerely lament his loss.

P.S.—Mr. Burn's sons having embraced other pursuits, his practice devolves upon his nephew and partner, Mr. J. Macvicar Anderson, Fellow, with the assistance of Mr. W. Colling, who for many years had the management of Mr. Burn's office.

List of the Principal Works of the late WILLIAM BURN, Esq., Architect.

MANSIONS.

Date.	Place.	Client.	Nature or Extent of Work.
1820.	Blairquhan.	Sir David Hunter Blair.	New House and Offices.
...	Carstairs.	Henry Monteith, Esq.	Ditto Ditto.
1821.	Camperdown.	Viscount Duncan.	Ditto Ditto.
1823.	Riccarton.	Sir William Gibson Craig.	Ditto Ditto.
...	Niddrie.	Colonel Wauchope.	Ditto Ditto.
...	Lochend.	Captain Warrender.	Ditto Ditto.
1824.	Snaigow.	Mrs. Keay.	Ditto Ditto.
...	Strathendrie.	Hon. Mrs. Douglas.	Ditto Ditto.
...	Ratho.	John Bonar, Esq.	Ditto Ditto.
...	Brodie House.	Brodie of Brodie.	New Wing.
1825.	Pinkie.	Sir John Hope, Bart.	Alterations and Additions.
...	Laurieston.	Thomas Allen, Esq.	New House and Offices.
...	Pitfour Castle.	Sir J. S. Richardson.	Alterations and Additions.
...	Freeland House.	Lord Ruthven.	New House and Offices.
...	Drimfinn.	Hugh Maclean, Esq.	Ditto Ditto.
...	Dalhousie Castle.	Earl of Dalhousie.	Alterations and Additions.
1826.	Garscube.	Sir Archibald Campbell.	New House and Offices.
...	Hoddam Castle.	General Sharp.	Alterations and Additions.
...	Fettercairn.	Sir William Forbes.	New House and Offices.
1827.	Balcaskie.	Sir Ralph Anstruther.	Alterations and Additions.
...	Whittinghame.	James Balfour, Esq.	Ditto Ditto.
...	Clifden.	Sir George Warrender, Bart.	Ditto Ditto.
1828.	Dupplin Castle.	Earl of Kinnoul.	Ditto Ditto.
1829.	Faskally.	Archibald Butter, Esq.	Ditto Ditto.
...	Raehills.	J. J. Hope Johnstone, Esq.	Ditto Ditto.
...	St. Fort.	A. C. Stewart, Esq.	Ditto Ditto.
...	Milton House.	— Lockhart, Esq.	New House and Offices.
1830.	Drumlanrig Castle.	Duke of Buccleuch.	Alterations and Additions.
...	Tynningham House.	Earl of Haddington.	New House and Offices.
...	Hamilton Palace.	Duke of Hamilton.	Stable Offices.
...	Sprott House.	James Sprott, Esq.	New House and Offices.
1831.	Ardgowan.	Sir M. Shaw Stewart, Bart.	Ditto Ditto.
...	Kilconquhar House.	Sir Henry Bethune.	Alterations and Additions.
...	Bowhill.	Duke of Buccleuch.	Ditto Ditto.
1832.	Auchterarder.	James Hunter, Esq.	New House and Offices.
...	Dalkeith Palace.	Duke of Buccleuch.	Alterations and Additions, and New Conservatory.
...	Spottiswood House.	John Spottiswood, Esq.	New House and Offices.
...	Gosford.	Earl of Wemyss.	Alterations and Additions.
...	Posso House.	Sir John Nasmyth.	New House and Offices.
1833.	The Gart.	Captain Houston Stewart.	Ditto Ditto.
...	Netherby.	Sir James Graham, Bart.	Alterations and Additions.
1834.	Thurso Castle.	Sir John Sinclair.	Ditto Ditto.
...	Marchmont.	Sir H. P. Hume Campbell, Bart.	Ditto Ditto.
...	Monkrigg.	Captain Keith.	New House and Offices.
1835.	Tyneholme.	Patrick Dudgeon, Esq.	Ditto Ditto.
...	Aboyne Castle.	Marquis of Huntly.	Alterations and Additions.
1836.	Stenhouse.	Sir Michael Bruce.	New House and Offices.
...	Anton's Hill.	General Sir Michael Hunter, Bart.	Ditto Ditto.
...	Castle Menzies.	Sir Neil Menzies, Bart.	Alterations and Additions.

Date.	Place.	Client.	Nature or Extent of Work.
1836.	Knowsley.	Earl of Derby.	Boat House, Lodges, &c.
...	Duncrub.	Lord Rollo.	New House and Offices.
1837.	Lude.	J. J. McInroy, Esq.	Ditto Ditto.
1838.	Balcarres House.	James Lindsay, Esq.	Alterations and Additions.
...	Harlaxton Manor.	Gregory Gregory, Esq.	Ditto Ditto.
1839.	Muckross Abbey.	Rt. Hon. H. A. Herbert.	New House and Offices.
...	Falkland.	O. Tyndall Bruce, Esq.	Ditto Ditto.
...	Beaufort Castle.	Lord Lovat.	Alterations and Additions.
...	Whitehill.	R. B. Wardlaw Ramsay, Esq.	New House and Offices.
1840.	Thirlestane Castle.	Earl of Lauderdale.	Alterations and Additions.
...	Oxenford Castle.	Earl of Stair.	Ditto Ditto.
1841.	Stoke Rochford.	Christopher Turnor, Esq.	New House and Offices.
...	Seacliffe House.	George Sligo, Esq.	Ditto Ditto.
1842.	Galloway House.	Earl of Galloway.	Alterations and Additions.
...	Rauceby.	Anthony Wilson, Esq.	New House and Offices.
1843.	Cairnhill.	Colonel Ferrier Hamilton.	Alterations and Additions.
...	Prestwold House.	C. W. Packe, Esq.	Ditto Ditto.
...	Mertoun House.	Lord Polwarth.	Ditto Ditto.
...	Banff House.	Sir James Ramsay, Bart.	Ditto Ditto.
1844.	Revesby Abbey.	J. Banks Stanhope, Esq.	New House and Offices.
...	Raby Castle.	Duke of Cleveland.	Alterations and Additions.
..	Carradale House.	Richard Campbell, Esq.	New House and Offices.
...	Dartrey.	Earl of Dartrey.	Ditto Ditto.
...	Red Rice.	Rev. Thomas Best.	Additions and Alterations.
1845.	Inchdairnie.	Mrs. M. A. Aytoun.	Ditto ditto, and Lodges.
...	Leny House.	J. B. Hamilton, Esq.	Additions and Alterations.
...	Clatto.	Colonel John Low.	New House and Offices.
...	Ladykirk House.	David Robertson, Esq.	Additions and Alterations.
1846.	Eaton Hall.	Marquis of Westminster.	Ditto Ditto.
...	Calwich.	Hon. and Rev. Aug. Duncombe.	New House and Offices.
...	Creedy House.	Colonel Fergusson Davie.	Additions and Alterations.
1847.	Bangor Castle.	Robert E. Ward, Esq.	New House and Offices.
...	Gorhambury.	Earl of Verulam.	Alterations and Additions.
1848.	Clandeboye.	Lord Dufferin and Clandeboye.	Ditto Ditto.
...	Idsworth Park.	Sir J. C. Jervoise, Bart.	New House and Offices.
1849.	Moor Park.	Lord Ebury.	Alterations, Additions, &c.
...	Callton Mor.	N. Malcolm, Esq.	New House, Offices, &c.
...	Arundel Castle.	Duke of Norfolk.	Alterations, Lodges, &c.
...	Eastwell Park.	Earl of Winchelsea.	Alterations and Additions.
...	Beechwood.	Sir Thomas Sebright, Bart.	Ditto Ditto.
...	Fonthill.	Marquis of Westminster.	Design for a large Mansion.
1850.	Pepper Hall.	Lord Alvanley.	Alterations and Additions.
...	Babworth.	H. Bridgman Simpson, Esq.	Ditto Ditto.
1851.	Sandon Hall.	Earl of Harrowby.	New House and Offices.
...	Abbotsford.	J. R. Hope Scott, Esq.	Additional Wing, &c.
...	Lochend.	Sir John Warrender, Bart.	New Kitchen Offices.
...	Dunira.	Sir David Dundas, Bart.	New House and Offices.
...	Roehampton.	S. Lyne Stephens, Esq.	Alterations and Additions.
...	Holkham Hall.	Earl of Leicester.	Ditto Ditto.
...	Stoneleigh Abbey.	Lord Leigh.	Alterations, New Conservatory, &c.
...	The Hirsel.	Earl of Home.	Alterations, Lodges, &c.
1852.	Kilruddery Hall.	Earl of Meath.	Ditto, New Conservatory, &c.
...	Branksome Tower.	C. W. Packe, Esq.	New House and Offices.
1853.	Buchanan House.	Duke of Montrose.	Ditto Ditto.
...	Godmersham Park.	Edward Knight, Esq.	Alterations and Additions.
...	Orwell Park.	George Tomline, Esq.	Ditto Ditto.
1854.	Watcombe.	J. K. Brunel, Esq.	New House (not built).
...	Hamilton House.	Duke of Hamilton.	Alterations and Additions.
...	Castlewellan.	Earl Annesley.	New House and Offices.
1855.	Kinmel Park.	Hugh R. Hughes, Esq.	Alterations and Additions.
...	Patshull.	Earl of Dartmouth.	Ditto Ditto.
...	Taplow Court.	C. Pascoe Grenfell, Esq.	Ditto Ditto.

Date.	Place.	Client.	Nature or Extent of Work.
1855.	Surrenden Dering.	Sir Edward Dering, Bart.	Alterations and Additions.
...	Amport House.	Marquis of Winchester.	New House and Offices.
1856.	Brodrick Castle.	Duke of Hamilton.	Alterations and Additions.
...	Fonthill.	Marquis of Westminster.	New House and Offices.
1857.	Sandbeck Hall.	Earl of Scarborough.	Alterations and Additions.
...	Lynford Hall.	S. Lyne Stephens, Esq.	New House and Offices.
...	Montagu House.	Duke of Buccleuch.	Ditto Ditto.
1858.	Cheveley Park.	Duke of Rutland.	Alterations and Additions.
...	Tusmore House.	Earl of Effingham.	Ditto Ditto.
...	Wishaw House.	Lord Belhaven.	Ditto Ditto.
...	Tottenham Park.	Marquis of Ailesbury.	Ditto Ditto.
1859.	Stanway House.	Earl of Wemyss.	Ditto Ditto.
...	Balentore.	David Lyon, Esq.	New House and Offices.
1860.	Blythfield Hall.	Lord Bagot.	Alterations and Additions.
...	Dogmersfield House.	Sir Henry Mildmay, Bart.	Ditto Ditto.
1861.	Tehidy Park.	J. F. Basset, Esq.	Ditto Ditto.
1863.	Polmaise.	Colonel Murray.	New House and Offices.
...	Ganton.	Sir F. Legard, Bart.	Ditto Ditto.
...	18, Carlton House Ter.	Duke of Newcastle.	Ditto Ditto.
...	Shirburn Castle.	Earl of Macclesfield.	Stables, &c., &c.
1864.	Blickling Hall.	Marquis of Lothian.	Alterations and Additions.
...	Spye Park.	Major Spicer.	New House and Offices.
...	Blankney Hall.	Henry Chaplin, Esq.	Ditto Ditto (not executed).
...	Crown Point.	Sir R. J. H. Harvey, Bart.	Ditto Ditto (not executed).
...	Bearwood.	John Walter, Esq.	Ditto Ditto (not executed).
...	Swanbourne.	Sir Thos. F. Freemantle, Bart.	New House and Offices.
...	Kimbolton Castle.	Duke of Manchester.	Alterations and Additions.
...	17, Grosvenor Square.	Earl Fortescue.	New House and Stables.
1865.	Whittlebury.	Lord Southampton.	New House.
...	Powerscourt.	Viscount Powerscourt.	Alterations and Additions.
1866.	Weston Park.	Earl of Bradford.	Ditto Ditto.
...	7, Grosvernor Place.	Lord George Manners.	New House and Stables.
...	Wickham Court.	Colonel Farnaby Lennard.	Alterations and Additions.
1867.	Oaklands Park.	F. G. Dalgety, Esq.	New House, Offices, &c.
1868.	Rendlesham Hall.	Lord Rendlesham.	New House and Offices.
...	Ottershaw Park.	Sir Edward Colebrooke, Bart.	New Wing and Alterations.
..	Brocklesby Park.	Earl of Yarborough.	Alterations and Additions.
1869.	Somerley.	Earl of Normanton.	Ditto Ditto.
...	Crichel.	H. Gerard Sturt, Esq.	Ditto Ditto.

PUBLIC BUILDINGS.

Date.	Name.	Locality.	Nature or Extent of Work.
1816.	Custom House.	Greenock.	New Building.
..	St. John's Church.	Edinburgh.	Ditto.
1822.	Lunatic Asylum.	Perth.	Ditto.
1823.	Union Bank.	Dundee.	Ditto.
1824.	Watson's Trust Hospital.	Edinburgh.	Ditto.
...	Lunatic Asylum.	Dundee.	Alterations.
1826.	Church.	St. Monance.	New Building.
1827.	Sir Wm. Forbes's Bank.	Edinburgh.	Ditto.
...	Church.	Corstorphine.	Ditto.
...	Gordon's Hospital.	Edinburgh.	Ditto.
1828.	Church.	Stenton.	Ditto.
...	Churches.	Dundee.	Restorations.
...	Bank of Scotland.	Glasgow.	New Building.
1829.	St. Giles's Church.	Edinburgh.	Restoration.

Date.	Name.	Locality.	Nature or Extent of Work.
1829.	Church.	Thurso.	New Building.
1830.	Shaw's Hospital.	Edinburgh.	Additions.
...	Episcopal Chapel.	Peebles.	New Building.
...	Theatre Royal.	Edinburgh.	Ditto.
...	Church.	Minnigaff.	Ditto.
1831.	Madras College.	St. Andrews.	Ditto.
1832.	Church.	Newburgh.	Ditto.
...	County Buildings.	Haddington.	Ditto.
1833.	Ditto.	Inverness.	Ditto.
...	Bank of Scotland.	Stirling.	Ditto.
...	Ditto.	Kircaldy.	Ditto.
1834.	Lunatic Asylum.	Dumfries.	Ditto.
...	New Club House.	Edinburgh.	Ditto.
1835.	Church.	Dornoch.	Ditto.
...	County Buildings.	Cupar.	Ditto.
1836.	Royal Bank.	Edinburgh.	Additions.
1837.	Church.	Knowsley.	New Building.
...	Ditto.	Dalkeith.	Ditto.
...	Bank of Scotland.	Greenock.	Ditto.
1838.	Church.	Gladsmire.	Ditto.
...	Ditto.	Penninghame.	Ditto.
1839.	Ditto.	Hawick.	Ditto.
...	Ditto.	Morton.	Ditto.
1840.	Morningside Asylum.	Edinburgh.	Ditto.
...	Church.	Port Patrick.	Ditto.
1841.	North British Assurance Office.	Edinburgh.	Ditto.
1842.	Bank of Scotland.	Dundee.	Ditto.
1843.	Prisons.	Inverness.	Ditto.
...	Church.	Langholme.	Ditto.
...	Edinburgh Life Assurance Office.	Edinburgh.	Ditto.
...	Episcopal Chapel.	Dalkeith Park.	Ditto.
1845.	Western Bank of Scotland.	Glasgow.	Ditto.
...	Trinity Hospital.	Edinburgh.	Additions.
...	New Grey Friars Church.	Ditto.	Ditto.
...	Middle Church.	Dundee.	Restorations.
1859.	Junior United Service Club.	London.	Alterations.

Also a great number of Churches not mentioned, as well as other Public Buildings, including Schools, Parsonage Houses, Chapels, and Mausoleums, from the year 1816 up to January, 1870. (This List comprises 200 works out of about 700).

The Chairman said,—I am sure we all feel grateful to Professor Donaldson, for having brought before us this interesting sketch of the life of a gentleman just past away from among us. He has associated his memory not only with the glories of his native land, but with his 700 works—no mean halo to surround a departed artist! I cannot let this notice of the life of Mr. Burn pass without bearing my personal testimony to his great, his exceeding kindness to all those younger than himself, and I have had many instances of that kindness during my own career. He was always ready to give to his younger professional brethren sound, good, and shrewd advice, derived from his own very extended experience. His habits of business were a remarkable feature in his life. He was—I was going to say—more a man of business than an artist; but that would certainly not be right or fair,

because many of his works have very high artistic merits; but his habits of business were peculiar, and no doubt they contributed a great deal to the confidence placed in him, and the professional success which attended him through life. I have listened with great interest to this short memoir, and I have no doubt all, who knew the late Mr. Burn, must have done so, and have felt that, whatever panegyric Professor Donaldson has thought fit to pass upon him, it has been thoroughly well deserved.

Professor KERR, Fellow.—I can scarcely allow this occasion to pass without making one or two observations. I think the career of the subject of this memoir is most instructive. Mr. Burn aimed at being an eminently practical useful servant of the public, and the success, which attended his endeavours to satisfy that purpose, has been most complete from the commencement of his career to the end. And this, I consider, is an encouragement to all of us to adopt a practical course in our dealings, (as servants of the public — every one of us,) and to expect the same reward which he received. It is no easy thing—as many of us may say from more or less of personal experience—to satisfy the demands of the higher classes of society in respect of that very important matter—their domestic accommodation; and if Mr. Burn succeeded in acquiring and maintaining, throughout a long lifetime, so high a reputation in such a difficult matter, (though to some persons, apparently so easy,) as the design of gentlemen's houses, we must accord to him a very superior position. It is too much the fashion now-a-days to judge architects exclusively by other standards: but I hope this Institute is proof against any fallacy of that kind, and is always ready to attach to the memory of distinguished practical men the full recognition of their merits. I may say that Mr. Burn's plans for country houses —speaking as I do, I will not say with authority, but from certainly a careful study of the subject— were all, that one can express by the term faultless. He had so thoroughly acquired the mastery of the demands of that particular problem of plan—and those demands are neither few nor small—that he was able, so far as I could judge from a study of a number of his plans, (I regret to say without his consent) to meet the demands of his clients in such a manner, that I may safely say no one else in the country could hope to compete with him. It is matter of regret that we cannot have a collection of his plans laid before us for our consideration; but I am sure that any critic of such designs, who may have the opportunity of devoting himself to their study, will bear out all I have said in favour of our recognition of the remarkable skill they display. I have the greatest pleasure in bearing my testimony to the high merits of Mr. Burn, and in supporting the vote of thanks, which we are called upon to give to Professor Donaldson (who is always deserving such votes) for coming forward to give us this pleasing Memoir of so distinguished a colleague.

ON THE DESIRABILITY OF RESTORING CHURCHES OF THE ITALIAN STYLE OF ARCHITECTURE.

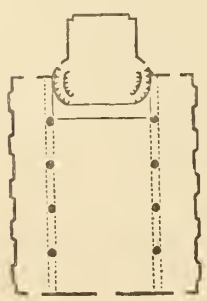
By the Rev. E. L. Cutts, B.A.

The taste of the public during this generation—at least of the church-building and restoring public—has run so exclusively in the direction of the Gothic revival, that it has failed to do anything like common justice to Classical architecture in general, and to churches of that style in particular. And yet we have in London and in some of our towns churches in this style which are really noble buildings, many which are of very respectable architectural merit, and others which, while they are not perhaps such as to satisfy our architects' knowledge and taste, are still important buildings from their size and their use. *Those* ought to be carefully treated, so as to bring out their architectural merits, *these* so as to make them at least as worthy as possible of their important use.

It is quite true that many of those buildings internally look very cold and un-churchlike, but so did our old churchwardenized Gothic town churches before they were restored. Some of these Classical churches will perhaps need as thorough and costly a renovation as those Gothic churches did. We shall have to make a clean sweep perhaps of lobbies and galleries and pews. Then we shall find in some cases that we have the shell of a very beautiful temple (as St. Mary Woolnoth and Hanover Chapel), in other cases we shall have a building of spacious area and imposing proportions, which are not unsatisfactory features for the restorer to deal with. We should have probably to put painted glass in the windows, and colour and gilding on the architectural features, and paintings on the walls, and statuary perhaps in suitable positions, and so we should give them as buildings the accessories which they have always needed. Then we shall have to replan the area so as to fit it for the purposes of a church, and to put into it furniture which will harmonize with the architecture in style, and yet be ecclesiastical in its general effect. Indeed, these are the two principles of restoration which I would venture to lay down: 1st, that it shall be in true harmony with the architecture of the building, not an attempt to Gothicize or Byzantinize Italian buildings; 2ndly, that it shall be ecclesiastical in its feeling and effect.

I venture to take three or four well-known London churches as examples, to sketch out the way in which I would suggest that they should be treated. And here it is right to mention that I have the advantage of embodying in my paper the suggestions of a gentleman who has professionally given great attention to the subject of the decoration of buildings, who was good enough to visit some of the London churches with me, and to put at my service the full notes which he made of his general ideas on the subject of their restoration.

To take first the church of St. Martin in the Fields. From its site as one of the group of buildings surrounding Trafalgar Square, the west-end focus of the Metropolis, it takes rank as one of our important public buildings. From its imposing size and from the architectural merit of its west end, it is not unworthy of its site. But I venture to remark that its interior is not what the interior of such a church in such a situation ought to be, and I shall hazard some suggestions as to its restoration. The plan of the church comprises a nave and aisles divided into five bays by columns of Corinthian order. Though externally the plan of the church is a parallelogram, internally the two eastern angles are taken out of the church, leaving a sacrarium between them. The western corners of this sacrarium are curved, the angles of the plan are occupied by vestries below, and pews above at the height of the galleries, the doors of the vestries and windows of the pews



opening upon the curved angles of the sacrarium. The arrangement irresistibly suggests the proscenium of a theatre, with its stage boxes, and forms one of the most objectionable features of the church. There are galleries round three sides, supported by the shafts of the columns. The church is lighted on each side by five semicircular-headed windows above the gallery level, and by as many dwarf square windows below. The pews and galleries are of oak, and the shafts of the columns of Portland stone.

In considering the whole treatment of this interior the first question which arises is, "Are the galleries to be retained?" In answer to this, looking to the somewhat flat and wide proportions of the church, and to the want of the room in a well-attended church, I say, "Yes"; but they must be disengaged from the shafts of the stone columns, and the fronts set back some feet and supported upon dwarf columns. The high oak wainscoting at the back of the galleries might also be lowered with advantage to the proportion of the walls.

I next take the "theatrical" chancel, if it can be so called, and, with a view to giving it more the effect of a real chancel, propose to raise the floor one step, starting with a bold curve from the first pier of the nave. A second curved step, or perhaps two, would rise at the more contracted part of the chancel. The extremely ugly carving, which now serves as a reredos, would be removed.

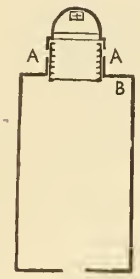
I think that the fixed pews should be altogether abolished in the nave, in order to gain the height which the building certainly wants. A handsome coloured marble pavement in the nave, arranged geometrically, would tell with good effect, and the faces of the square plinths supporting the columns (which would be exposed by the removal of the pews), might advantageously be panelled with marble. The chancel screen might be constructed, as a marble balustrade, upon the lower curved step and at the sides, and suitable stalls would take the place of the temporary ones now placed here for the choir.

I come now to the coloured decoration which must at the same time give the most advantageous effect to proportions of the building, and produce such a result as will be agreeable to its sacred use. The panels of the entire ceiling might have grounds of an aerial tone of grey, the relief ornament being left light, and the dividing bands picked in with subdued red. The same tone of colouring, somewhat more pronounced, would extend to the ceilings over the galleries. Having regard to the extent of wall already occupied by the dark-coloured oak, it might be inexpedient to use a light colour for the wall surface. A well toned red would probably prove the best colour; but some skill would be required in clearing it sufficiently from the oak and avoiding a too sombre result. The deep reveals of the windows offer a good field for gold and colours, while the windows themselves should be filled with glass in which much colour might be introduced, but which should have white in predominance. I would continue the same treatment of wall and window linings below the gallery as above; but the ceilings under the gallery would need a very light colouring; they might, nevertheless, be panelled by margins of flat colour. The columns should be treated as *light* in tone against the walls; the cornice, impost, capital, shaft and plinth might all have a warm stone colour as base. Gilding might be used in the sculptured portions, and a cautious relief of colour used in the cornice, especially between the consoles.

It would be most desirable to remove the varnish from all the oak work in the church, and if this were done by scraping, some blackness might be removed and the wood restored to an agreeable brown colour. This having been done, some members of the gallery front mouldings might be gilt.

The treatment of the chancel, as regards the walls and pilasters, would not differ considerably from that of the remainder of the church; a richer blue might, however, be used in the ceiling. Gold might be more freely used, and the lower portion of the wall might be diapered. As to the "opera-boxes," as one must call the pews which open (on the gallery level) into the chancel, they are so completely of the architecture of the church, that it seems impossible to do otherwise than tolerate them. The pulpit might be thrown out from one of them, and perhaps a choir organ might find a place in the

other. These alterations would not make the interior all that we could wish a church to be, but would, I venture to think, make a very great improvement in it.



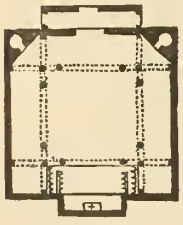
I take next the church of St. Mary-le-Strand. Its small size and highly ornamented exterior make it one of the gems of our Classical churches, while its conspicuous situation makes it an important public building. Internally it is also a beautiful building, and would present only one difficulty, viz., its heavy elliptical ceiling—to a very satisfactory restoration. Its plan consists of a nave with portico at the west end, a very short choir, rather narrower than the nave, and a semi-circular domed apse for a sacrarium. In elevation the nave is lofty in proportion to its other dimensions, and, apparently to prevent an appearance of disproportionate height, is divided into two stages by a very bold unbroken frieze. The wall above and below the frieze is divided into panels by couples of pilasters; in the upper stage the panels are occupied by the windows, in the lower stage they afford large well-shaped spaces for historical paintings.

For its restoration I should like to extend the short choir a little into the nave, retaining the organ in the east corner of the nave, and the pulpit, a very handsome example of its kind, in the south-east corner. The domed ceiling of the apse is divided into three bays, the panels of which are filled with plaster rays and sprawling angels, which should be removed. The choir already affords a satisfactory model for the restoration of the rest of the church, and shows how admirable the effect would be. The pilasters are enriched with gilding on their flutings and their capitals, and oil paintings of good tone in oak frames are placed in the panels, the ground of the panels being a flat tone of red.

Taking first the decorative treatment of the nave itself. The ceiling, also divided into five bays, has an elliptic section, which is cut into by the circular window heads. It is divided by a heavy enriched moulding into coffers, in courses alternately square and diagonal, each coffer being filled by a coarse pendent flower. The treatment of the ceiling is decidedly too heavy for the rest of the architecture. I think the proportion of the building makes a transverse division of the ceiling into bays desirable. The courses of square coffers corresponding with the pilasters may therefore be coloured in maroon red and citrine, whilst the larger diagonal coffers may be treated in blue. The centre flowers and the enriched moulding should be light, and relieved with gold at well-defined points. In the same way all the leading mouldings of the elevation, including the capitals and bases of the pilasters, may be kept a light stone colour, with judicious relief of gilding.

The *upper* wall surface, that is to say of the piers between the windows, might be of a deep, warm stone colour, deep enough to relieve clearly the mouldings and pilasters, and these latter might be of light stone colour, similar to the mouldings, and with gilded flutings. The frieze above them should be quiet red, with emblems and ornaments in gold.

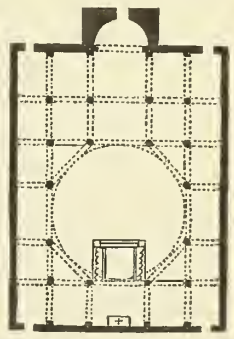
I will take as my next example the church of St. Mary Woolnoth, at the corner of Lombard Street and King William Street. The plan is a square, or nearly so, with a smaller square inserted within it, at each of whose angles are three large, handsomely proportioned Corinthian columns. These columns do not carry a dome, which was perhaps the most obvious idea, but on a square entablature they support a lantern or kind of square clerestory of half the height of the main walls. This is the whole of the church, except that a shallow recess on the east side contains the altar, under an oak baldachin carried by two twisted columns with Corinthian capitals. It is not much like a church, but it is a very beautiful temple. The whole area is occupied with pews, and there are galleries on three sides, an organ at the west end, and a great pulpit with sounding-board and a reading pew on the east side. The first step towards



the restoration would be to empty the interior, and lay down a handsome floor of inlaid marbles. I suggest the removal of the galleries with some compunction, for they are an excellent example of the way in which galleries may be treated. They stand back behind the columns, detached from them, but their fronts are projected forward like balconies between the columns, so as to get all the advantage of the more forward position without the usual interference with the architecture. They are, moreover, handsomely carved. I should, nevertheless, like to sweep them away. They are not required for the present congregation, which only numbers some fifty or sixty; and the architecture is really so exceedingly fine, that it ought to have the justice of being thoroughly displayed to the greatest advantage. Retain the present sacrarium, with its classical baldachin; only clearing the oak from its shining, sticky-looking varnish, and relieving it with a little gilding. Leave the rest of the area entirely unencumbered, using chairs when needed for the congregation; and move the pulpit, without its sounding-board, into the south-east corner. The coloured decoration should be the subject of careful study. Beginning above, the ceiling of the lantern, which is in one large panel, might be treated with gold stars, and perhaps a large centre device in gold on a blue ground; its cornice and mouldings relieved with gilding. The spandrils on either side the large arched windows afford a fine field for figures on a gold ground. The columns, architraves, cornices, &c., would perhaps be best treated as light stone, with a handsome relief of gilding in the capitals and enrichments. The frieze might have writing or ornament upon a deep coloured ground. The rolls in the lower parts of the column flutings might be gilt. The walls would require careful consideration. Probably the best effect would be obtained by panelling the upper walls and richly diapering their lower portion. I do not think that the light or position would justify pictures. An opportunity for high art is, however, well afforded at the east end, both over the outer elliptic arch and over the baldachin. From the latter place the trumpery shields, &c., would be removed and the coffered ceiling over it handsomely brought out with colour and gold.

We will conclude with the church of St. Stephen's, Walbrook, which is commonly spoken of as Wren's masterpiece. Its plan is a square, with a smaller square inscribed within it, on which are placed columns, twelve in number, which carry a central dome; the square is lengthened a bay westward, introducing four more columns into the design.

I humbly confess my inability to appreciate, so highly as its reputation seems to demand, this "masterpiece" of Wren's; and it seems to me the most difficult of all the buildings I have mentioned both to decorate as a Classical building and to arrange as a church; but I feel bound, as part of the task which I have undertaken, to commit myself to some suggestions on the subject. There is little to obstruct our restorations; there are no galleries, and if the pews were removed we should have a very spacious hall, with a number of columns which look rather scattered, not falling into groups as in St. Mary Woolnoth, and not forming vistas from any point of view except along the narrow aisles between the columns and the walls. There is a large window at the east end, with a smaller one on each side of it, at the ends of the principal aisles, and a round window on each side again, at the ends of the outer aisles. The west is similarly lighted, except that the place of the great window is occupied by a picturesquely framed organ. There are large windows, in what we may call the transepts, and curious oval windows, with their longer axis horizontal, high up in the side walls. For the decoration of the building I should suggest first to lower the height of the present panelled dado, and then to paint pilasters on the walls to correspond with the columns; this would probably relieve the present scattered appearance of the columns, on which I have remarked, by giving the effect of additional columns, and throwing them into apparent vistas. The



effect would be the more decisively produced if the columns were coloured red, as I propose they should be, and the painted pilasters of the same colour ; the ground of the walls being left light, the capitals touched with gilding. The walls would thus be divided into panels, and one of the windows I have spoken of would come into each panel. At the east and west end of the transepts the windows would nearly fill these panels. In the side walls the oval windows would come into the heads of the panels, and the rest would easily be decorated by a few lines of coloured decoration following the outline thus marked out. A vast deal of complicated enrichment remains to be planned for the ceiling and dome.

In arranging the building as a church the great difficulty is that the constructive features of the building afford us little help. The difficulty is apparent in the present arrangement, in which the alley across the dome from north to south forms the boundary of the eastern blocks of pews, and on their western line are placed the pulpit and reading desk.* I should be disposed to take the line a little further east, defined by the columns, as shown on the plan, for the western boundary of the chancel; the north and south boundaries fall naturally in the line of the eastern columns, and on this space I should boldly build up a chancel, two or three steps high, with a low wall, and ballustered screen, of marbles, with two bold bemas at the western angles, one for the pulpit, the other for the lectern. The space east of this, defined by the columns, would naturally form the sacrarium, raised several steps above the chancel, and with taller screens. The whole middle compartment of the eastern wall would be treated as a reredos; while a baldachin over the altar, for which we have authority in St. Mary Woolnoth, would help to make this the artistic and ritual focus of the building.

The dome is divided, horizontally, into eight segments, each of which is panelled with coffers. This would probably be treated most effectively by retaining the structural parts as light stone, with some very simple decoration, and making the grounds of the coffers blue, the rosettes and mouldings being gilt. The console cornice would require bold relief and a liberal use of gilding, whilst the pendentives might be treated in more subdued tones, with perhaps a gold ground to the panels. It would be worth consideration whether to remove the relief ornament from these panels and substitute paintings of the four Evangelists. The mouldings which frame the pendentives, and therefore mark the support of the dome, should be boldly gilt. The coffers of the flat ceilings might also have blue, with gilt enrichments, but the treatment of the vaulted portions of the ceiling would require considerable study. It would at any rate be essential to clearly mark the joinings, by the colouring or ornament, since these form a very picturesque feature of the church. The entablature and columns would be best retained as stone, with relief of gilding and with colour in the frieze. The wall and space surrounding the large windows affords an opportunity for rich decoration, whilst the bevel next the light would tell well with positive ornament on a gold ground, as at St. M. Maggiore at Rome.

I should gladly see St. Mary-le-Strand taken as the subject of the first experiment, if experiment it can rightly be called in this case, where a commencement of the work already exists, and where the result can be so certainly foreseen. The cost of the decoration would probably not exceed £1500., a sum which ought to be forthcoming for a purpose of metropolitan interest. In France the Government would undertake it immediately.

I should like to see St. Mary Woolnoth taken in hand at the same time. The Goldsmiths' Company, I believe, and private people of influence in the City, have already interposed to save it from being included among the City churches condemned to destruction; let them complete their

* Sir C. Wren, in his report on the City Churches, protested against the original introduction of pews, and would therefore concur in the proposal to sweep them away. "It were to be wished," he says, "there were to be no Pews, but Benches. But there is no stemming the Tide of profit and the advantage of the Pew-keepers."

good work by effecting such a re-modelling of its beautiful interior as I have suggested—the cost need not be large: probably £2000. would effect it; and they would give the Metropolis a more beautiful Classical interior than any which it at present possesses. It would not be well adapted for a large congregation, but no large congregation now uses it; the Sunday congregation is usually fifty; but it would be admirably adapted for one of those short, daily, mid-day services which have lately been established for the use of City men; and its situation in the very focus of the City makes it the church of all others in which such a service should be held. The Corporation might undertake to carry out Sir M. Digby Wyatt's plans for St. Lawrence, Jewry.

Happily we have the artists who could execute these restorations thus suggested, even though they include, as in some cases they ought to include, painting of a very high character of art. I have to thank Mr. J. D. Crace for kindly exhibiting on the walls to-night in general illustration of my subject, drawings of ancient Italian church decoration from Sienna and elsewhere, and of modern examples of a similar kind from Munich. Sir Digby Wyatt has been so good as to send his designs for the restoration of St. Lawrence, Jewry, and Mr. Burges his designs for the restoration of the Chapel of Worcester College Oxford, and here is also a rough sketch of the coloured decoration of St. Peter's, Notting Hill, just executed by Messrs. Harland and Fisher. I may mention also Mr. Butterfield's restoration in progress at Christ Church, Albany Street, and St. John's, in the Waterloo Road.

I do not at all despair of seeing the public led to appreciate these buildings, which they have so long undervalued and neglected, induced to contribute munificently to their proper restoration, and I venture to promise that they would be astonished and delighted with the results.

The CHAIRMAN having remarked that the subject of Mr. Cutts's paper was one of great interest, invited discussion upon it.

Mr. C. F. HAYWARD, Fellow.—I rise for the purpose of proposing a vote of thanks to Mr. Cutts, who is always ready to give the Institute the benefit of his ecclesiological and archæological knowledge, and to offer his amateur architectural views to free discussion within these walls. We ought to welcome the notes he has prepared with reference to these Classic buildings, as we have formerly done those of Gothic character. Whether the time has now come for them or not, or whatever difference of opinion may exist with regard to the style of the proposed improvements, there can be no doubt these Classic churches as they exist are a reproach to us. No one could be found to say, for instance, that the grand old churches in the City referred to by Mr. Cutts are exactly in the condition that they should be, and that no alteration is required to adapt them to present times and altered circumstances. Either they ought to be taken care of, or if not deemed worthy of anything but neglect, should be swept away altogether, as actually cumbering the ground, and doing more harm than good by taking up the services of those who would be better employed elsewhere, and who are now in charge of the mere machinery of worship instead of looking after the spiritual welfare of a congregation. When one comes to think it over, many of these buildings seem hardly worth the amount that must be spent upon them, in order to fit them for the purposes of the due celebration of divine worship, and, indeed, the smallness of the congregations which at present attend them, would scarcely warrant any considerable expenditure on the fabrics, especially in decoration. We know that very considerable (though occasional and fitful) discussion is going on as to which of these churches should be maintained; but those that do remain—these grander ones—it seems to me ought to be taken in charge by some one, with a view of making them more accordant with modern ideas of church arrangement. If that cannot be done by the congregations themselves, it might be referred to the body who have been, or may be, commissioned to enquire as to these churches, who might originate some scheme with reference to their proper restoration and maintenance. This body, it seems to me, should not only go into the

question of what churches should be destroyed, but also how those which remain should be restored, and perhaps apportion some part of the money received for the sites of the churches destroyed, to the improvement of those which remain, before any other appropriation of it is made. This is a point which I apprehend must be seriously discussed in a short time, for Sir Charles Trevelyan, and others, have of late taken up the subject very earnestly, and I trust it will be followed up more generally hereafter. But already there are several of these churches restored in such a way as opens the question which Mr. Cutts has taken up, viz.: how this restoration should be carried out, whether in a Classical or in a Gothic spirit? Notwithstanding the eminent success with which some churches have been restored in a quasi-Gothic manner, I cannot help thinking Mr. Cutts is right when he advocates consistency of style, and that when there is a good Classic building to deal with, the only proper way in which an architect could work upon it would be to treat it as he would a Gothic building under similar circumstances, and taking it for what it is in fact, carry out any changes in the spirit of the original style. Acknowledging, therefore, the great pleasure derived from seeing the way in which a different style—our loved Gothic—has been applied to Classic churches (though some of them not exclusively Classic in style) in the City, and elsewhere, I cannot help feeling, at the same time, that, if the matter is put to us definitely as architects, we must in all fairness and consistency, say, a good Classic building should be restored in a Classic style. This seems to be the moral of Mr. Cutts' paper, and with his strong ecclesiological and Gothic predilections, great credit is due to that gentleman for so boldly stating his opinion.

There is one notable example of the restoration of a building in a Classic style, which I am inclined to quote (a drawing of some of the decorations of which is exhibited), because it is the work of our friend Mr. Burges, who has departed herein from the style with which he is generally identified, but which is hereby shown to be only one phase of the studies of that accomplished artist. The chapel of Worcester College, Oxford, as plain a building as can be imagined, has been restored in the interior, in such a way that it is now a real landmark in the history of church (or chapel) restoration. It is an example of how a Classic building can be treated classically by one who has true Gothic spirit in him, and that it should be more successful than most Classic buildings treated by Classic architects, is in itself remarkable, and shows that it is rather the accident of study than the special features of a style which rules the peculiar form of expression adopted by a true artist, and that as the same grand ideas may be expressed in different languages, so an artist need not confine himself to one style of art exclusively in order to express himself with effect.

I would now mention one church in particular which seems to me a good example of the state in which most of these Classic churches are in at the present moment, and one which would require some special treatment to make it suitable for its ordinary uses according to modern ideas. I refer to St. George's, Bloomsbury (by Hawksmoor, 1731), a church which has been called by Walpole,* a "master-

* "The church is situated on the north side of Hart Street, and has the advantage of a wide-built street to show its architecture, which is an odd mixture of the Tuscan and Corinthian orders. That part of the body visible might very readily be converted into an impregnable castle; but the front exhibits a grand portico, elevated on a flight of steps, that supports six Corinthian columns, their entablature, and a pediment, which are reflected by the same number on the wall of the church. But the proportions are not quite correct, and the doors and windows are execrable. Mr. Walpole ('Anecdotes,' vol. iv, p. 43.) calls the steeple 'a master-stroke of absurdity.' This, I trust, I shall be able to disprove in another place, except the introduction of supporters of the arms of England: those, I grant, are most ridiculously disposed.

"Contrary to established custom, the altar occupies the north end. Although the design is extremely heavy, and *this effect is produced by the composite order*, there is something superb in the double colonnade before the altar, consisting of eight fluted pillars and six pilasters, which support entablatures, correct enough, but the arches from them are fit only for a prison; *besides, they are semi-ovals.* Four high piers, on the east and west walls, *imitate* pilasters. They support three arches on each side, four of which are semi-arches, and the rest like that before the

stroke of absurdity," and in some respects with truth, for the tower and quasi-spire is surmounted by a statue of *King* George instead of the *Saint*, and at the base of the spire there are the lion, the unicorn, and the crown built in on an enormous scale. The portico, and the mass of the building, however, are really fine, and built of the best material, Portland stone, now grown white with age, and indeed the interior generally, without its galleries, is so good that it should be treated (we cannot say "restored,") in some way so as at least to make it available for its purposes as a church. The interior, however, at present is—to use the terms applied so long ago as 1803, by Malcolm, in 'Londinium Redivivum'—extremely heavy, though there is something superb in the double colonnade before the altar.* To say nothing about the altar or communion table being at the north end, which is a striking peculiarity of this church, the chief point for which the building was erected seems to have been overlooked, as it often was in these great galleried churches. This object I apprehend was, and should be, in all Protestant churches, that the congregation should have the opportunity of seeing as well as hearing all that is going on. That is a simple business view of the question; but in this church, which I quote only as an example, and many others, it is almost impossible to do so. The way in which the high pews, especially those in the galleries, are constructed, and the way in which they are placed with reference to the pulpit and reading desk, which tower one over the other, shutting out all view of the shallow space beyond the altar rails, which serves as a chancel, is enough to show that something is required to be done to make the building fit for the simple purposes for which it was designed. I speak now without reference to the details of ritualistic arrangement, as to any screen, or raising of the floor, though all these might be made much more ecclesiastical and seemly for holy worship, but I simply draw attention to the fact that the building shows great want of arrangement for the common purposes for which it was supposed to have been adapted. Here is a fine building, in many respects, almost thrown away, and even deficient in those very simple requirements of seeing and hearing, which are often alleged as excuses for the frequent heavy and oppressive ugliness and coldness, which distinguish churches of this style and date, and which it is time should be remedied. In conclusion, I beg to propose a vote of thanks to Mr. Cutts for his interesting communication.

Mr. E. I'Anson, Vice President.—I have great pleasure in seconding Mr. Hayward's motion. I congratulate the meeting on the advent of a gentleman who stands up and gives us a paper in favour of the Italian churches of London. They represent an epoch in the history of architecture of which, in these days, it is well to be reminded. There is, no doubt, a vast deal to be done in improving the interior of the churches in the city; but we should bear in mind, I think, that the question of church decoration was not revived until after a considerable revulsion in the state of religious sentiment. So long as Puritan and Low Church views prevailed churches were not decorated; and up to a recent time, till the High Church party called attention to the subject, the decoration even of Gothic churches was never dreamt of. During the time in which this state of religious feeling prevailed, the residence of the inhabitants within the City was more customary than it is at the present day; but now the congregations in these City churches are exceedingly small, the interest of the parishioners in religious matters being

---

altar. The south end has a colonnade, similar to the north. The church is thus formed into a square above the cornice of the great arches; but the Attick baffles all description: it is the external wall of a prison set thick with iron-barred windows, under one of the clumsiest, yet highly-enriched, ceilings in Europe.

"The galleries, though supported by pretty antique pedestals, are extremely heavy; the organ is very hideous, and the pulpit equally so. The altar-piece is grand; a pedestal, or basement, support two fluted composite pillars, with an angular enriched pediment, surmounted by vases. The intercolumniation is a deep niche, beautifully inlaid, with a glory, cherubim, a large octagon, filled with sexagons, and a border of scrolls."

* Malcolm's 'History of London,' vol. ii, p. 481.

in most instances diverted from that locality to others, and hence many of the City churches are scarcely visited at all. I was myself born and brought up and have lived amidst these churches. I know how bare their walls are and how deserted they now are as places of worship. I think, myself, that all Wren's churches are very noble structures, but they are singularly wanting in what we now look for as characteristic of religious places: scarcely any of them have a chancel: indeed, they are little more than square rooms. We now look upon the chancel as a distinctive feature of a church for our system of worship. In that respect they differ distinctly from gothic churches: in other respects I venture to say they are quite as convenient as places of worship; and the Gothic churches are generally so encumbered with columns that a large portion of the congregation in the pews cannot hear what is going on. That is not the case in Wren's churches. If we look at the examples of Saint Vincent de Paul and Notre Dame de Lorette, in Paris, we see how effectively internal decoration can be carried out; in the first-named church, especially, the decoration depends very much upon the magnificent historical paintings which surround the whole church, the work of H. Flandrin and others, and the cost of that style of decoration I think would hardly be subscribed for by the scanty congregations of the City churches. The most effective restoration of one of our City churches has been carried out by a very distinguished Gothic architect. That is at St. Michael's, Cornhill, which is a rich parish and happens to have funds sufficient to afford the means of restoring and decorating the church in a successful manner. There is, no doubt, immense scope for such work in the City, and I should be glad to see some of these decorations carried out. It has been said that public measures are in contemplation for the removal of these churches; but at the present moment, we may conceive, it is difficult to accomplish that. I believe the law gives power to parishes to amalgamate the churches; but it is so many generations past since interments took place in these churches in which families now living are interested, and I think it is not for the next generation that all these arrangements can be carried out which would, nevertheless, be distinctly for the public good.

Mr. JOHN P. SEDDON, Hon. Sec.—I have been much interested by this paper and appreciate Mr. Cutts' motives, and the practical way in which he has brought forward this subject. There are two or three other churches of the kind in London, which have been, to a certain extent, treated as he would propose, viz., one in the Waterloo Road, by Mr. Blomfield, and another in Albany Street, by Mr. Butterfield. The result in each case has been so far successful as to afford great encouragement to carry out Mr. Cutts' views in other cases.

Mr. J. D. CRACE, Contributing Visitor.—Mr. Cutts advocates that, where a church exists, and it is considered right that it should continue to exist, whether in London or elsewhere,—be it of a Gothic or a Classic character,—it should be made worthy of the worship which is carried on there. It appears to me that there are a large number of these structures of more or less merit, which may be rendered more worthy of the purpose for which they were built and less repellant in appearance than they now are. In considering the re-arrangement and coloured decoration of such churches, we are, perhaps, under even less difficulty than in treating churches of a Gothic character. The churches existing on the continent which have been more or less elaborately ornamented, and whose walls have been treated as fields for pictorial art, are very numerous; and so near as in the city of Paris we have several examples of churches of a Classic character treated ornamentally with great skill and taste, I may particularly mention that of "St. Eustache," occupying a position of transition from Gothic to Classic, which is treated with a coloured decoration of a very clever character. The treatment of most of the churches which Mr. Cutts has mentioned is certainly more difficult than of such a church as "St. Eustache," because they are much less picturesque in their composition. The interior of St. Martin's Church looks like a large concert room or theatre; still I think, with skilful treatment, such buildings might be

rendered more ecclesiastical than they are. No doubt in the case of a church like St. Stephen's, Walbrook, a very fine effect might be produced by a coloured decoration. The interior of St. Mary Woolnoth, is dismal in the extreme. It is like a dirty whitewashed cellar. You can hardly distinguish the details owing to its grimy condition; but a certain amount of distinct coloured decoration would render its really fine architecture intelligible. It appears to me that the subject has been left too long in abeyance. The sympathies of the public and of many of us lie more in the direction of Gothic art. At the same time we are not under difficulties in falling back upon examples for the treatment of such buildings as those to which Mr. Cutts has referred.

Professor DONALDSON, Past President.—I cannot allow a discussion of this nature to go on without expressing my astonishment to think of the period at which we are arrived. Fifty years ago, if a gentleman had stood up and talked of improving the architecture of Wren by squaring corners here, or cutting off angles there, it would have caused a consternation in the profession. But we have reached an irreligious epoch as to architecture, which Mr. Cutts, has, I think, remarkably and fully developed this evening. It consists of color. The mind of the worshipper is to be gratified, and his devotion excited by blue, green, or red colors on the walls, and gold on the ceiling. My own feeling is that religion is not of that gaudy-painted character, but a sober, solemn impression worthy of the religious place where we worship the Almighty in spirit and in truth. It seems to me, there ought to be reserve and soberness in the human mind, when we approach the awful presence of the Almighty. But if we are to have the eye distracted and the taste flattered—if, when a man is at his devotions, he is to be met with gold in one place and red in another, is it not calculated to distract the attention? Ornament is not a thing to be put upon architecture, but should arise from the architecture itself. That is a truth which should pervade all design: therefore in the case of our buildings for worship, they require reserve and soberness of treatment, or the religious feeling cannot be solemn. It is suggested that our Italian churches should be treated with decoration in the way proposed to-night. I have been abroad a good deal lately, and what have I seen? I have seen worship carried on at Genoa in places like theatres: solemn they are not: decorated they are. You may go all over Italy, you may go to Venice, and see pictures with gaudy frames, and they attract the worshipper and excite his feelings. Is that consistent with one's ideas of the worship of the Almighty? I think not! We are told to do away with the pews and be satisfied with chairs. Is that a point worthy of being discussed in a great Institute like this? or is it worthy of a religious question at all? It may be a matter of speculative economy where they pay one penny for their use on ordinary occasions, and eighteen-pence for great festivals! As to high pews, I do not advocate them: I think they are destructive of architectural and solemn, religious effect; but as to chairs, I cannot admit them. It has been remarked that Wren's City churches were mostly built without chancels. Why, he had not room for chancels! He did right well. He appropriated all the space he had to religious worship, and did not sacrifice the church to the chancel, which is too much now the case in our time. It is said the church of S. Mary Woolnoth requires decoration. I think it is one of the finest churches we have. It may be the pews might with advantage be lowered; perhaps if free seats were introduced, it would be an improvement, but you want to decorate S. Mary's and gaud it. It appears to me nature unadorned is adorned the most, and in like manner the great principle of architecture is, that it should be its own decoration, which is not to be derived from colours put on. Mr. Cutts wishes these experiments to be tried upon our Italian churches—pull them to pieces—touch them up—ornament them—paint them. It is something like the experiment which is being tried with our religion, and I am afraid that is at the root of a great deal of this. I think proper and sober decoration there ought to be in our churches, and particularly in our cathedrals. Look at St. Paul's,

Wren had not time to finish the decoration, but he left sufficient indication of his ideas of what he would have done, and was capable of being done subsequently. Then again St. Peter's at Rome is decorated with propriety and sober reserve, but with very little colour. Under such qualifications it may be desirable that churches should be improved where they can be, taking care that the impression is solemn, and not of a gew-gaw character, particularly in our parish churches.

Mr. Edwin Nash, Fellow.—It appears to me that architectural appreciation is the key of this subject, and that the correct appreciation of art is of high importance, for it is clear that the genuine artist ought to have his mind ready to appreciate art in every phase if it be real art, and there is no real art without beauty, and if beauty exists, whatever the style of it may be, every person calling himself an artist ought to be able to appreciate it. With regard to the so-called Italian churches in London, some of them are remarkably excellent, and some are very indifferent, as indeed, Mr. Cutts has stated, but I am agreeably disappointed in finding that he appreciates these Italian buildings. Professor Donaldson, in his remarks, has vigorously denounced that warmth of color which I believe, if judiciously applied, would be of great assistance. We know how crude some parts of Wren's churches are, and how hard are the lines and forms of some of the window openings, but I do not believe that all the works attributed to him really emanated from his mind; nevertheless, many of his buildings are so excellent and are so convertible (without damaging his architecture,) to the more modern idea of what a church should be, that I think they might be treated by architects in a very artistic manner so as to make them attractive instead of repulsive, as some of them really now are. With regard to St. Michael's, Cornhill, as restored, or rather altered, by Mr. Scott, he has treated it in an Italian-Gothic style, and there was an excuse for doing so, considering that the tower itself professes to be Gothic, and that there were two styles in the building, and consequently he may have been puzzled as to which of the two he should adapt as his key-note. He took a medium course, and it must be considered a success. My opinion is, that a Classical or other building, if restored or altered, should be treated in the same style, with the same feeling as the original design, and I can imagine nothing more painful than a building like ancient St. Paul's with the classical portico of Inigo Jones attached to it, however beautiful the portico may have been in itself. Such a treatment as that would not occur if a due appreciation were given to art for the art itself, and I consider that architectural appreciation has always been imperfectly cultivated.

Professor Kerr, Fellow.—May I be allowed to ask Mr. Cutts what he means by a baldachin in some of the City churches? [Mr. Cutts.—A canopy supported by columns, over the communion table.] Is not that rather to be called a kind of Classical reredos? At any rate I would venture to make a few remarks; for the discussion has really taken so pleasant a turn that one can hope to be able to escape giving offence in expressing one's candid opinion; although more commonly, on a subject of this kind, it is necessary before one opens his mouth at least to look round the room and see who is present. We have arrived at several very useful propositions. The first is that there is a certain amount of Wren's architecture which is of sufficient merit to admit of its being "restored!" Secondly, we have arrived at the proposition that the restoration is to some reasonable extent to be permitted to be in accord with the original design of the buildings! This will be satisfactory to many of us, I dare not say to all, but to some. For my own part, I think if one or two of the City churches which are condemned to be pulled down were to be previously "restored" without this condition, indeed in the most approved modern Gothic manner, it might be well worth while. It would at any rate enable us to see what some of our friends would do for the credit of their creed with *carte blanche* as regards style. Gentlemen appear to forget that there is here something which is not in itself religion, but which at the same time is worth mentioning in connection with religious architecture. I will not say that England

is a Protestant country, the remark would be too severe; but I may say that in the time of Wren it was a Protestant country. Wren had to build Protestant churches, and Protestant churches he built, and built them well. Hence the curtailment of chancels and the regretted absence of baldachins to stand in the midst of the sweeping ceremonial stages which the lecturer advocates. We do not want such things for the ordinary forms of Protestant worship; they have no legitimate purpose for the architect to recognise. It is true that fashion changes, and that we must allow for its change; and when one side of the house is in the fashion, the other of course must be out. Some of us have been out of fashion in church building for a long while; but the time is coming when by a turn of the wheel of fortune we shall come in again. I am sure that some of our younger friends at least may expect to live to see the fashion entirely changed. I have only to add that when this time comes it may be difficult for them to know what to do in the way of "restoring" the Gothic churches that are now so fashionable.

Mr. HEBB, Associate.—I have always understood that Sir Christopher Wren left a scheme for the decoration of St. Paul's in color which, I believe, is now being partially carried out in accordance with the designs he drew out. I would ask Professor Donaldson, who has so extensive an acquaintance with the original drawings of architects, whether it is not probable that some records of Wren's drawings of the City churches built by him exist, and also those of Hawksmoor, the architect of St. George's, Bloomsbury?

Mr. JOHN P. SEDDON, Hon. Sec.—I think hardly sufficient attention has been given to the admirable drawings of ancient church decorations by Mr. Crace, exhibited this evening; in them color is introduced to a fuller extent than anything Mr. Cutts has suggested. If I have any criticism to offer upon his suggestions, it would be that they slightly savour of timidity. The only fault I should apprehend would be that there might be too little colour rather than too much. If you want solemnity of effect, you must not "touch up" a church with a little bit of gold and red here and there as if it were a drawing room, but you must have a composition from an artist mind, and the thing must be taken up and thoroughly carried out from beginning to end. That is what I should wish to see, as I am sure neither Wren nor any other architect could have intended entirely to cover the walls with cold white plaster, or propose as a final result the present dingy effect; and we shall only carry out their views in making the buildings worthy of the house of God by richly and thoroughly decorating them. I cannot see why the mind should be distracted by these edifices being richly coloured and decorated. We are in a world in which every thing around us is richly decked with color, and I do not know that the mind need be taken away from the Great Author of all things, by the buildings dedicated to His worship being similarly adorned.

Mr. T. MORRIS, Associate.—I think all who have seen St. Michael's, Cornhill, must be favourably impressed with the effects of colouring aptly employed in churches; but the great value of the colouring there is the beautiful manner in which it is blended on the walls. It produces an harmonious tone more artistic than any amount of mere decoration. I think that would meet to a large extent the object Mr. Cutts has in view in advocating the decoration of these churches. No doubt, as applied by Mr. Scott, at Cornhill, colour has greatly added to the interest of that edifice, and might be introduced with similar advantage in churches of every denomination.

Mr. C. FOWLER, Fellow.—One thing strikes me with regard to the restoration—so called—of the City churches; it is that totally different principles must be followed from those which have been advocated so frequently in this room in the case of Gothic churches. In such restorations it has been said you should do as little as possible; you should leave things as far as possible as you find them, and simply uphold. That I think is right in an architectural point of view, because the Gothic churches were built for much the same form of service as that which they are now being restored for. The sort of service to which we are coming approximates in form more and more to that which prevailed in the

days when those churches were built, and for which architects were then called upon to provide buildings; but when these City churches were built the form of the service was different, therefore "restoration" would with regard to these churches be unsuitable from an ecclesiastical point of view. What you want is to adapt them for a different form of service to that which they were intended; and I venture to think that the architect who can take one of Wren's churches or any other good church of that day, and satisfactorily adapt it for the services as now desired, would deserve more credit than one who merely builds a good Gothic church. I must say when I saw Mr. Burges' restoration of Worcester College Chapel, I was even more struck with it than I have been with some of his Gothic work, for if you look into that work you will find that a distinct 13th century feeling can be traced in the details, though the general effect is quite in harmony with the Italian building. I think myself that if any gentleman succeeds in adapting some of the City churches with as great skill as Mr. Burges has shewn at Worcester College Chapel, we shall have some very fine churches indeed.

The CHAIRMAN.—I have great confidence in submitting the usual vote of thanks to Mr. Cutts for the paper he has read, not only on account of the paper itself, but the still more interesting discussion which it has elicited. So much has been said, and so well said, that it leaves hardly a remark to be made; but I cannot let the occasion pass without offering one or two observations which occur to me. I endeavoured to appreciate Mr. Cutts' subject in the two lights in which I think he intended to be considered, viz., one architecturally, and the other ecclesiastically. With respect to the first, I think there cannot be much difference of opinion amongst the educated members of this Institute, viz., that painting is the handmaid of architecture, as is also sculpture, and whether applied to buildings of the Gothic or any other style, if applied with good taste, and if it be consistent in character and harmonious in treatment, whether in ecclesiastical or civil architecture, it is always equally satisfactory and desirable. Examples of this are presented to us all over Italy and other parts of Europe. Classical architecture nearly universally practised in Italy, was made as universally decorated unless the means for doing so were wanting; where the means existed it has been carried out with the greatest possible taste and the most beautiful effects. I need only refer to the Pallazzo Madama and the Loggie of the Vatican, at Rome, to the Baptistery and Chapter House, at Sienna, the Villa del Te at Padua, and a hundred other like examples. I think Mr. Cutts wished rather to call attention to the somewhat curious fact, that whereas modern Classic architecture is sometimes of a good type, and even when emanating from so great a master of Classical architecture as Sir Christopher Wren, yet the idea that there was a necessity of enhancing the good effect by properly conceived decoration in colour was overlooked by Wren and others; and that it is even worth while considering whether we cannot add to the credit of Wren, and the effect of the churches in London designed by him, by some attempts on his works in that direction. I agree with Mr. Seddon, that a little colour, like a "little knowledge—is a dangerous thing." Colouring, if carried out with a view to architectural effect, should be bold, uncompromising and ample. The Saint Chapelle, at Paris, has every square inch covered with colour. Yet what is the effect? Not tawdriness! nothing painful. I look upon it myself as rich, solemn and grand, and I for one should not feel the least diminution of devotion, but rather the reverse if worshipping there because I was surrounded by such beautiful art. In the same way some Classical examples might be referred to. I am, of course, speaking of really well-studied and perfect decoration as satisfactory in effect. So much then for the artistic part of the subject. I confess that personally I should hail with satisfaction the carrying out of the suggestions which Mr. Cutts has thrown out if it is possible to do so. With respect to the ecclesiastical view of the subject, and as to the question of differing arrangement for one style of religious service or another, there will of course always be a difference of opinion; but as artists we need not, and I think ought not, to go into that subject. One remark occurs to

me which I think will, however, meet with the concurrence of all. If it is conceded, that every kind of art, if it be real and good, assists and enhances a sister art, painting in relation to sculpture and architecture in relation to both, if that be a truth, then if we are to delight to erect temples to Almighty God, it is our bounden duty to make them excellent by every means in our power, and with every faculty we possess, not only as regards construction and particular modes of decoration, but with a simple, earnest desire to do the very best we can. We do not hesitate in our private buildings to indulge in every luxury that taste and wealth can command, and *a fortiori*, ought we to do much more in respect of those buildings devoted to the worship of Almighty God? It is now my pleasing duty to ask you to give a vote of thanks to Mr. Cutts for his paper.

The vote of thanks having been unanimously passed,

Rev. E. L. CUTTS.—In acknowledging the thanks you have awarded to me, I congratulate myself on two grounds—first that I have succeeded in making my paper the means of eliciting a valuable discussion, and next that I have avoided letting it be the source of a religious dispute. I was a little afraid of the latter, and took care to avoid anything that might lead to it. I venture to think that if there has been anything of the kind I did not provoke it. It is always a great pleasure to me to be permitted to come here, as an amateur, to learn from you, and I always do carry away some valuable instruction. At one time this evening I was afraid I was going to be sent away with the dictum of a learned Professor, that architecture ought not to be helped by the sister arts of painting and sculpture; but the subsequent remarks of the Chairman and others have sufficiently vindicated their connection. I was happy in being able to explain to another learned Professor what a baldachin is, and I am more happy in being able to tell him that the only one which I mentioned is the original one in St. Mary's Woolnoth, whose retention I vindicated.

The meeting then adjourned.

BRIEF MEMOIR OF THE COMMENDATORE POLETTI, HONORARY AND CORRESPONDING MEMBER.

By Professor Donaldson, P.P., Hon. Sec. For. Corr.

The Commendatore Luigi Poletti, born at Modena in 1793, deceased the 2nd of August, 1869, in his 77th year, at Baveno, on the Lago Maggiore. He had gone thither in order to examine the columns of red granite in the quarries on the Lake, which were preparing to be put up in the Portico to the principal front of the Basilica of St. Paul's, outside the walls of Rome. He had left Rome only on the 2nd of July, was seized with a sudden illness, and in less than two days fell a victim to the attack. His principal works are at Rome, where he resided. The most important is the total reconstruction of St. Paul's after its destruction by fire, and in the restoration of which he scrupulously adhered to the details of the original. So unsparing was the Pope, and so munificent the contributions to its adornment, that nothing can be imagined more splendid than the profusion and richness of its decorations, with its marble columns, the facings of the walls with the same material, of every variety of tone, the bronzes, and mosaics, and marble floors. Even the Viceroy of Egypt sent blocks of the rarest alabaster for the choicer columns, and pilasters of the high altar and entrance doorway. In fact, the cost has been calculated, exclusive of these gifts, to reach a million and a quarter of our money, and the result a most magnificent church, rising as a phœnix from the flames. It is not for us to question the wisdom, or utility, or pious motives of such an expenditure in rebuilding a church in a most unhealthy situation, from which the very monks, its usual inhabitants, are obliged to fly for months together, on account of its pestilential atmosphere, and it is often surrounded for weeks by the overflowing of the waters of the Tiber. He also erected the graceful column to commemorate the dogma of the Immaculate Conception in the Piazza di Spagna, at Rome, adorned with the noble statues of his colleague and friend Tenerani, who survived him only a few months. His latest complete work was the Scotch College, opposite the Palazzo Barberini. He also built several churches, cemeteries, houses and erections in other parts of Italy; was ex-President and Professor of Architecture in the Academy of St. Luke, and honored by a public funeral at the expense of that body. He was author of three learned dissertations, read in the Archæological Academy, on the Peoples and Primitive Arts of Italy, and had made great progress in a fourth, which it is to be hoped will be published. With deep erudition he sought to prove that that region was inhabited by an indigenous race in the remotest times, even before the Greeks; that they emigrated into Greece, and thither carried their arts and wisdom, hence deducing that Italy had its own civilization coeval with that of Greece, if not anterior to it, as proved by its architectural monuments when considered for the space of two great epochs, the one from the expedition of the Argonauts to the origin of Rome, the other from that period till the Empire, when all Italian science and art were merged in that of Rome. These evidences of his taste and erudition prove, that he was a man of various attainments, and worthily held his high position in the estimation of his countrymen. He was of most kindly disposition and obliging manners, and ready to assist the researches of his foreign brethren in art. He was never married, and consequently having no children, he left his modest fortune to his native city of Modena for the promotion of his own favourite studies, less the sum of 3,000 scudi. This was to found a biennial prize of 200 scudi, to be awarded by the Academy of St. Luke at Rome, to the author of the best essay on the Fine Arts by an Italian artist, with 100 scudi to cover the cost of publication. The subjects are to be alternately Architecture, Painting, and Sculpture. We thus see how this amiable and able architect not only honourably followed out his profession, but that even after death he generously desired to promote, as his will expresses it, the study of nature and of truth in their application to the Fine Arts, as a perpetual canon. He was buried in St. Paul's Basilica near the entrance door in a grave, which by the gracious permission of the Pope he had been specially allowed to construct for himself.

Royal Institute of British Architects.

PRESENTATION OF THE ROYAL GOLD MEDAL AND INSTITUTE PRIZES.

At the Ordinary General Meeting, held on Monday, the 2nd of May, 1870, Sir WILLIAM TITE, M.P., President, in the Chair.

THE preliminary business of the evening having been brought to a conclusion,

The PRESIDENT rose and said.—Gentlemen, I now come to what probably is the most agreeable incident of the year connected with this valuable Institution; I mean the presentation of the Royal Gold Medal. I think we are infinitely indebted to Her Majesty for the kind continuance of her gracious pleasure in receiving our annual nominations for this award so courteously and so kindly as she does. She has never received, I will venture to say, any name with greater satisfaction than that of the gentleman whom I have to bring before you to-night in the person of my old friend Mr. Benjamin Ferrey. I believe that he and I began life about the same time, and I am afraid that was a good while ago; he tells me that he was a pupil, not of the elder Pugin, but of the eldest Pugin, for there have been three of that name in my day and generation. I recollect perfectly well this Mr. Pugin, when I was a very young man in the office of Mr. Laing, architect to the Custom House, whose pupil I was. Mr. Pugin came to the Custom House, then in course of erection, to make some drawings, for he was one of the ablest draughtsmen of the day. Mr. Pugin, besides being distinguished as a draughtsman, was one of the earliest pioneers of the study of Gothic architecture. I dare say you all know the book by Pugin and Mackenzie—though you cannot recollect its publication as I do. The illustrations of that work were, I believe, to a great extent etched by Mr. Pugin himself, and it was one of the great precursors of architectural literature, for I think it was published almost as early or earlier than Britton's great works of that day. It introduced a taste for Gothic architecture; and in that book were engraved some of the most agreeable and, so far as I recollect, some of the finest specimens of that architecture. It was most interesting and valuable at the time to which I am now referring; for when I was a student, as my friend Professor Donaldson was, the books which could teach us and enable us to learn that peculiar and interesting branch of our art were very few, and not very meritorious. The one however, that Mackenzie and Pugin produced deserves even at the present day our consideration.

My friend's history, as I have said, began at an early period of my own life; and though I had not then the pleasure of knowing him, as I have said, I knew his master; I feel much gratification in introducing Mr. B. Ferrey's name to the notice of the meeting in association with this award, as I have had the honour of doing to Her Majesty the Queen. He is, *par excellence*, a designer of churches. We all know his merit in that way. I have asked him for a list of his works. He has furnished me with it; but it is so long that I should weary you if I read it through. We all know the great merit—the wonderful merit in point of fact—of some of these structures. The one perhaps best known in London is St. Stephen's Church, Rochester Row, built at the expense of that generous lady Miss Burdett Coutts, whose acquaintance I have recently made at Torquay, where she was staying, like myself, on account of her health. I think that church is quite worthy of her munificence, and the desire of every one to see a monument of taste and elegance erected so successfully as has been done by my friend Mr. Ferrey. The large church of St. James, at Morpeth, and that national work—the restoration of the Lady Chapel, and west front of Wells Cathedral, are further instances of his skill. I hope our friend may live to see the completion of the latter work, which is one of the worthiest restorations of one of the finest buildings undertaken by any architect of the present day. I may also mention, having reference to the medal I shall have the honour to present, that our friend, amongst others, designed and built Esher Church. Her Majesty the Queen, when residing at Claremont, has

recently seen that church, and, as I understand from the best authority, was much pleased with the building. Now I leave the churches; there are too many to be enumerated, and indeed I do not know how many there are.

Then I come to other buildings, and amongst them I find the Dorset County Hospital, which is considered a very good hospital, as I know; the Town Hall at Dorchester is also his work. Then, going to the sister country, he restores the barbican, the curtain wall and towers of Killaleagh Castle. I will next mention the large house or palace of Sir Watkin Williams Wynn at Wynnstay, in the place of that which was burnt down, a work of great merit and much beauty, as I know from having frequently seen it. Nor must we forget the large mansion at Bulstrode, building for the Duke of Somerset. All these works are, I think, creditable to our profession, but infinitely creditable to our friend, to whom I present this testimony of our esteem and regard. All I can say in addition is, I hope he may long live to cultivate his skill and great talent, and find the occupation for it that he has hitherto found. I have the pleasure to notice that, like Mr. Pugin, he has the advantage of having a very skilful son, who has won some of our prizes, and will possibly win many more. I am delighted to think that a worthy father is likely to be followed by an equally worthy son. As we have a good deal of business before us, I will not add more to these brief remarks, and indeed I could scarcely say all in my friend's presence that I should like to say. I have now the pleasure to ask him to stand forward to receive the highest testimony which the Institute of British Architects can confer upon any one. I have the pleasure of handing to him on behalf of the Institute this elegant mark of our esteem and regard for him, and of our gratification at his professional success. I hope he will long live to be an ornament to that profession, and to be decorated by the medal which I have now the pleasure to present to him.

The medal having been presented amidst the plaudits of the meeting,

Mr. FERREY said.—Mr. President and gentlemen, I cannot find words to express the deep feeling which I entertain of the great and unexpected honour you have this evening conferred upon me. When I consider those who have preceded me—the distinguished men, whom I will not mention, but whose names are well known to you—I cannot but deem myself unworthy of the reception of this compliment. It would ill become me to detain you by any lengthened observations. I will only say it is to me a source of the greatest pride—it must be so—to receive at the hands of my professional brethren such a mark of their consideration and regard. I will not dwell upon the subjects which have been brought before your notice this evening by the President, because in doing so I should detain you at some length. I think I shall best consult the feelings of the meeting, and that I shall do that which is most becoming on my part when I express to you my very deepest sense of the compliment which you have conferred upon me, and of which I shall ever entertain the most grateful remembrance.

The PRESIDENT then proceeded to present, with appropriate remarks, the Soane Medallion and other Institute Medals and Prizes, awarded in accordance with the resolution of a Special General Meeting, held on the 14th March, as follows:—

To Mr. ERNEST C. LEE (Associate), of 10, Lincoln's Inn Fields, for his design for a Railway Terminus. *The Soane Medallion.*

To Mr. G. HUSKISSON GUILLAUME, of Southampton, for an essay on the requirements for a Town Church. *The Institute Medal.*

To Mr. EDWIN J. MUNT, of 12, John Street, Adelphi, for measured drawings of Castle Rising, Norfolk. *The Institute Silver Medal and £5. 5s.*

To Mr. ARTHUR HILL (Associate), of 34, Keppel Street, Russell Square, for measured drawings of Ardfert Cathedral, Templenahoe and Kilmelchedor Churches. *A Medal of Merit.*

To Mr. R. A. CAME, (Student), of 39, Great James Street, for his design for an Ornamental Ceiling. *The Students' Book Prize.*

The proceedings of the Special Meeting then terminated.

Royal Institute of British Architects.

At the Ordinary General Meeting held on Monday, 16th May, 1870, T. H. Wyatt, President, in the Chair.

PRELIMINARY PROCEEDINGS.

CASE OF Mr. E. M. BARRY, R.A., AND THE OFFICE OF WORKS.

The President said that before proceeding with the business of the evening, he wished to inform the members what steps had been taken with reference to the subject of the last special meeting. He would state that a deputation from the Institute had waited on Mr. Gladstone in reference to the case of Mr. E. M. Barry. Sir W. Tite and several members of the Council attended on the occasion, but as he (Mr. Wyatt) was unable to be present, and therefore was not in a position to report precisely what took place, he would ask Mr. Eastlake to read an abstract of the proceedings which he had prepared, and which would probably be interesting to the meeting.

Mr. Eastlake then read as follows:—

Deputation to the Government.

"In accordance with a resolution passed at the Special General Meeting, held on Monday, the 9th May, 1870, a deputation from the Institute waited on Mr. Gladstone at Downing Street at 3 p.m., on Friday, the 13th inst. It consisted of the following members: Sir W. Tite, M.P., and A. J. B. Beresford Hope, Esq., M.P., Ex-Presidents; E. I'Anson, Vice-President; Sir Digby Wyatt, Messrs. G. Aitchison, A. W. Blomfield, D. Brandon, F. P. Cockerell, H. Currey, R. W. Edis, G. Godwin, J. H. Hakewill, O. Hansard, C. F. Hayward, R. Kerr, T. H. Lewis, J. Peacock, E. Roberts, R. L. Roumieu, T. Roger Smith, J. P. St. Aubyn, G. Truefitt, F. Warren, W. White, S. Wood, J. P. Seddon, Hon. Sec., C. L. Eastlake, Assistant Sec.

The deputation was received by Mr. Gladstone, with whom were also the Chancellor of the Exchequer (Mr. Lowe), and the First Commissioner of Works (Mr. Ayrton).

Sir W. Tite, having introduced the members, said that it was not his intention to refer to the legal question of the right of ownership to architects' drawings; he might, however, state that the resolutions recently passed by the Institute, and copies of which had been sent to every member of the House of Commons, only confirmed the professional custom and practice which had long existed in this country. Sir William added that he had never been asked by any client to give up his drawings, and if he had been so asked, he would certainly have declined to do so. The main object of the deputation was, however, to call the attention of her Majesty's Government to the abrupt dismissal of Mr. E. M. Barry from his office of Architect to the Houses of Parliament, under circumstances which were made known in the correspondence, recently published by order of the House of Commons, between that gentleman and the Office of Works. The whole affair had been fully discussed at a Special Meeting of the Institute, and he was bound to say that the feeling in the profession was exceedingly strong on both points, viz.: the question as to the ownership of the drawings, and also as to the slight cast on Mr. Barry. Having given this short explanation, he would now leave those who had taken a prominent part in that discussion to speak for themselves on the subject.

Sir Digby Wyatt stated that he represented his brother, the President of the Institute, who was unavoidably prevented from attending. He referred to the strong feeling entertained by the

Institute that Mr. E. M. Barry had been dismissed from office in a very unjustifiable manner, and especially alluded to the uncourteous, and he might even say rude nature of the answers which that gentleman had received during his correspondence with the Office of Works on this subject. Sir Digby dwelt on the imperative necessity of consigning public buildings of any architectural importance to the care and professional superintendence of a competent architect, which was the universal custom in foreign countries. With regard to the ownership of architects' drawings, he observed that the deputation based their views on the professional custom recognized not only in London, but in the provinces, on this subject. He trusted that Her Majesty's Government would remember that Mr. Barry had neither refused, nor wished to withhold, any information of a practical kind which was necessary to the Office of Works, and which it was in his power to supply; but, as a matter of principle, sanctioned by undeviating custom, it must be maintained that the drawings and documents prepared for the purpose of erecting a building were the property of the architect who designed it. Sir Digby remarked, that while the policy of the Government might be dictated by worthy motives in promoting national economy, that policy would effect but a short-sighted economy if exercised on occasions like the present. He would, moreover, remind Her Majesty's Government that Mr. Barry, during his term of office, had not been paid by salary, but by commission, for works carried on, and that the extent of such commissions had not exceeded £300. per annum, so that the expense saved for the future was not worth consideration. Sir Digby added that the present unsettled state of the law of copyright was an additional reason why an architect should maintain the right of ownership to his drawings, which in point of fact constituted his sole protection against piracy of design.

Mr. Beresford Hope, M.P., spoke, as Past-President, of the architectural importance of the Houses of Parliament, and of Mr. E. M. Barry's zeal and attention to the professional supervision required from him while he remained in official charge of the building, and during the alterations and additions carried on in connection with them. He referred to the cavalier and abrupt manner in which Mr. Barry had been dismissed from office, and to the injury likely to ensue to the public service in the Department of Works if the course adopted by the Government should be formally confirmed.

Mr. George Godwin, F.R.S., said he had been requested, as an old member of the Institute, to add some words to what had been already said. First, as to the ownership of drawings; as a matter of universal custom they belonged to the architects. As the conductor of a professional journal he had corresponded during five-and-twenty years with persons in all parts of the kingdom on this subject, and he could say that in no one case of which he was aware had the claim when made on the part of the employer been maintained. He was not aware that any case had been settled in a court of law; representation of the existence of the custom and the common sense on which it was founded had sufficed to bring about a settlement. The custom prevailed everywhere. He believed copies of resolutions to that effect from societies in England, Ireland, and Scotland, not to speak of America, had been already handed to the Minister. He thought the Courts would hesitate before coming to any decision in opposition to a custom so long and generally held, even should they happen to be of another opinion. It had been asserted in a public journal that the Institute of Architects had wrongly interfered in expressing their opinion that it was necessary for the worthy maintenance of national monuments and buildings that they should be under the superintendence of specially educated men of high standing. He could not agree in this objection. The Institute as a body were wholly disinterested in so speaking, and he knew no other body from whom the public might more fairly look for an expression of opinion on the subject. Reference had been made to various public buildings, each placed under the superintendence of an architect. He might add to the list by naming nearly all our cathedrals. These important structures had suffered for years by being left to the care of a mason or a clerk of works; but the opinion of deans and chapters had become educated on the point, and now he believed there was not one that was not under the supervision of an architect. The profession were strongly affected by the

course that had been pursued towards Mr. Edward Barry and the important questions that were raised by it, and he ventured to urge that it called for reconsideration on the part of the Government.

Mr. JOHN P. SEDDON, Hon. Sec., referring to the question raised as to the ownership of drawings, advanced as a reason for the custom of architects retaining them the fact that an architect, in his position of umpire between his client and the contractor, ought to hold the contract drawings as between those contracting parties. Accidents and claims might arise after the completion of the work, and the contractor might fairly look to the architect for the drawings which were evidence of the contract, particularly as oftentimes the employers were temporary committees disbanded when the work was complete, and by whom the drawings might be lost or mislaid. The detailed drawings were only instructions given to the contractor as explanatory of the contract drawings, and it would be as reasonable to call upon the architect to give up his private letter-book as those. Mr. Seddon also pointed out that contract drawings never displayed the course of flues and drains, at any rate as executed, and therefore such drawings as Mr. Ayrton asked for would not be found among them, but were usually made during the progress of the work, and every architect would gladly supply his employer with such or copies of them.

Mr. AYRTON, First Commissioner of Works, replied, that the observations made by the deputation, and indeed the object of the deputation itself, was founded in error, and in a complete misapprehension of the course taken by the Office of Works. The correspondence which had been published between that Office and Mr. E. M. Barry contained only partial information on the subject before them; and Mr. Barry could, if he pleased, supply further details, which would put a very different construction on the matter. He (Mr. Ayrton) begged to state that, in referring the question which had arisen respecting the right of the Crown to the Law Officers of the Crown, he had taken the only course by which he conceived he could arrive at a proper solution of that question; and he had only adopted that course after the refusal of the executors of Sir C. Barry and after Mr. E. Barry's refusal to recognize the right of the Crown to certain documents which were required by the Office of Works. It was not the whole of the drawings which had been required, but a certain portion which were necessary, and for a specific purpose. He disclaimed any intention to be discourteous to Mr. Barry. The letter to Mr. Barry did not state that he (Mr. Barry) had been dismissed from his office, but that certain official changes were being carried out. Mr. Ayrton added, that it would be impossible for him then to enter into detail, but the whole question would be discussed in the House of Commons that night, when the public would be in a better position to judge of the matter.

After a few words from Mr. Gladstone, who said that he felt obliged to the deputation for stating their views on the subject, which should receive due attention from Her Majesty's Ministers, the deputation withdrew."

The Report having been read,

THE PRESIDENT said the Council had thought it right to postpone any further action in the matter until the opinion of the Law Officers of the Crown had been pronounced, and until it was known what further measures would be taken in the matter.

Mr. CHARLES BARRY, Fellow, said he was unwilling, for obvious reasons, to take any prominent part in the discussion of a subject interesting to all members of the profession, but he begged permission to make one or two observations bearing upon it. Mr. Ayrton, in his speech in the House on Friday evening, said that Mr. Gilbert Scott, as well as his (Mr. Barry's) partner and himself, amongst various architects of England, had acquiesced in the course proposed to be adopted in the case of the architect's drawings of the Houses of Parliament. To that statement he wished personally to give a most emphatic denial; he and his partner had addressed a letter to 'The Times,' which he presumed would appear on the following morning, stating that not only did they not acquiesce in the Department of Works retaining all the contract drawings in the case of the new buildings at Burlington House in

their custody, but that they strongly protested against such retention; the fact being that the contract drawings in the case referred to were all signed and executed at the Office of the Department of Works, under the eye of the Secretary of the First Commissioner. Those drawings were detained, the architects were unable to get them away from the office, and it was only after a great deal of trouble and pressure that they were allowed to take tracings of those drawings. Therefore, so far from having acquiesced in the retention of the drawings by the Department, his partner and himself protested against it; and he now wished to state his adherence to the professional custom as enunciated in the resolution passed at the recent special meeting of the Institute. He quite concurred in the view taken by the Council, that any further steps in this matter would be undesirable at present, save in one respect, viz., that inasmuch as the opinion of the Law Officers of the Crown, invited by the Government, would necessarily be *ex parte*, the Council, he would suggest, should take such means as might be open to them to place before those gentlemen the unanimous testimony which the Council had received from the principal architectural societies of the country, and such others as no doubt they would receive on the same subject. Otherwise, the opinion of the Law Officers would be *ex parte*.

Professor DONALDSON, Past-President, took upon himself to say, that no steps would be taken by the Council in this matter except under the advice of their Honorary Solicitor.

Mr. SEDDON, Honorary Secretary, said it had been determined by the Council to print all that had appeared on the subject, including the proceedings of the recent special meeting.

COLOGNE CATHEDRAL.

Mr. W. BURGES, Fellow, wished to occupy the attention of the meeting for a few moments, in reference to a subject which he brought before them a considerable time ago, viz., the projected alteration in the west front of Cologne cathedral—by which the gallery at the base of the western window would be sacrificed for the sake of producing a better effect in the stained glass about to be presented by the Prince and Princess of Prussia. It was only on the solicitation of Professor Donaldson, in whose hands the matter would more properly have been placed as Honorary Secretary for Foreign Correspondence, that he (Mr. Burges) had taken it up, and he need hardly say it had involved the writing of a great number of letters. The state of the case was as follows:—The present west window possessed neither mullions nor tracery, in fact, the only ancient part was that on the left side of the old south tower, which clearly showed that the architect of this tower had designed and begun a window with double tracery in the lower part, like the window actually executed in this tower, consequently Mr. Voigtel, the architect of the cathedral, intended no destruction but only an abandonment of an existing design. M. Reichensperger affirmed that the west window in Boisserèe's work was a mere imagination. An ancient original drawing showed the plan of a window with double tracery, and another old drawing (an elevation) proved nothing. It appeared that the battle was between that gentleman, supported by the ecclesiastical authorities on the one side and the architect and Berlin bureaucracy on the other, the architect having the idea that the exterior plane of mullions would spoil the effect of the stained glass placed in the inner plane. Mr. Burges concluded by observing that it seemed hardly to him a case for the interference of the Institute, more especially as no destruction of old work was involved. It was a pity that M. Voigtel should not be aware that modern stained glass rather gained than lost by being partly obscured; for his own part he (Mr. Burges) greatly deplored the omission of so prominent and beautiful a feature as the double plane of tracery.

Professor DONALDSON while agreeing that it was not a matter in which the Institute could in any way interfere, expressed his gratification that Mr. Burges had been so kind as to follow the subject up as far as he had done, as he was sure it could not have been placed in abler or more judicious hands.

The following Papers were then read:—

ON SOME ANCIENT IRISH CHURCHES.

By Arthur Hill, B.E., Associate.

I cannot commence with better words than those of Mr. J. H. Parker, in concluding an article published in 'The Gentleman's Magazine' for March, 1865. "The study of Irish architecture," he said, "is only commenced, and will require the labour of many heads and hands to work it out as it ought to be."

The conquest of Ireland took place in the year 1172, separating her architectural history into two great divisions: first, the buildings of the native Irish, and secondly, Anglo-Irish building; the former is the only existing remains of a purely Celtic style in the world, and as interesting as any of the minor styles of Europe. The latter so plainly shows its English origin, that it has no claim to be considered a distinct style. The works contained in this group are of all kinds, both ecclesiastical and domestic; they are inferior in size, and generally speaking, later in date than structures of a similar character in England.

Of the many works that come under the head of "native building" there are but four classes of structures professionally interesting to us—namely, the Round Towers, the Crosses, the small stone-roofed buildings known as "Oratories," and the churches, which are called in Irish "Daimliag"—literally meaning "stone house." The erection of these works may have continued later than the Conquest, at least in those parts of the country that remained more peculiarly Irish, while the Anglo-Irish style could by no posibility be earlier than that time. But these later works are generally so well authenticated that there is no room for disputation as to dates. Unfortunately, however, it is not so with regard to the primitive Irish works; for the documents we possess are not sufficiently trustworthy, nor are they so precise in their language as to enable us to identify beyond dispute any but one or two of the numerous buildings of this period. Hence the many wild ideas that have been put forth regarding their dates; and the many battles that have been fought on the subject. It may therefore be advisable for me briefly to mention some of the more prominent theories on the subject.

It appears that the first colonists of Ireland were a family of the Phœnician or Cuthite race—descendants of Ham; a people universally celebrated for their building powers. Their successors the Celts, who established themselves in Ireland some centuries before the Christian era, were civilized and taught the arts by this race whom they had conquered.

An elaborate and valuable work has been recently published by Mr. Marcus Keane, entitled, 'The Towers and Temples of Ireland,' in which he attempts to prove that the buildings we call "churches" were originally heathen temples, erected by the Cuthites before the time of Solomon; and to sustain this position he endeavours to draw a parallel between them and the Cyclopean buildings of Greece and Italy, the rock temples of India, and the ancient monuments of Central America; and also tries to show that the names of the various saints, to whom these churches are dedicated, are identical with the divinities or hero gods worshipped by this people. But such an absurd idea can never be sustained; and I feel sure that a professional observer, judging even from drawings or photographs, would ascribe nothing but a Christian origin to the buildings.

No doubt you are all familiar with Dr. Petrie's learned work on 'The Ecclesiastical Architecture of Ireland anterior to the Anglo-Norman Invasion.' The most important principles he establishes

are, that the round towers and adjacent churches are contemporary, Christian, and ecclesiastical, and that they were erected at different periods from the seventh to the thirteenth centuries. He refers largely to the ancient manuscripts of the country, and proves beyond doubt that there was stone building of some kind in Ireland at a very early period of the Christian era, but succeeds in putting a definite date on only one building, viz. Cormac's Chapel, Cashel, which he shows, by extracts from nearly all the manuscripts of the country,* to have been built in the year 1127, and consecrated "A.D. 1134, by many chiefs both lay and ecclesiastical."

The school that finds most favour perhaps on this side of the channel, contends that there was no stone building in Ireland of any kind before the eleventh Century; but this is far too sweeping an assertion to be accepted; though it may be quite true as far as regards those churches that exhibit some architectural pretensions, yet these were not the first stone buildings in the country. The followers of this school argue from their wide and extended knowledge of European building in general; and this is undoubtedly the proper light in which to view the architecture of any country; but at the same time the history of that country and the study of her ancient literature must not be lost sight of: for the ignorance of a mere archæologist, in the technical matters of our profession, is not more blameable than the narrow-mindedness of a mere architect in understanding, and in reconciling the many anomalies that occur in ancient documents.

We have abundant historical evidence to show the skill attained in early times by many ecclesiastics as artificers of shrines, bells, &c., and as illuminators of books. The celebrity of the Irish schools of learning is also well known; they were sustained even through the most troublous times, educating not only native but foreign youths, and sending missionaries all over Europe; some of the brightest lights in those dark ages were Irish-reared ecclesiastics.†

It is not in my power to-night to give a complete history of the Irish styles of building; to do so would require more extended knowledge than I possess; therefore I shall attempt nothing beyond a brief description of the three buildings that I measured, and have now the privilege of laying before this meeting. The Cathedral of Ardfert belongs to the Anglo-Irish class; the other two buildings, viz. Templenahoe and Kilmelcheder, are Celtic works, known as "stone churches."

I shall in no way mention either the "Round Towers" or "Crosses," but shall find it necessary presently to refer to a couple of "Oratories" that exist near Kilmelcheder. As a class they are small, rectangular buildings, of dry masonry, stone roofed, but without the use of the arch, for the walls are carried up with an inward tendency until they meet and are covered by a single course of stone, forming the ridge; each stone being horizontally bedded but overlapping like a corbel, until the form of the roof is attained. The entrance is invariably in the west, and usually there is a small window in the east gable; but they possess no architectural detail whatsoever.

The "churches" are larger in size, also rectangular, generally stone roofed, in which the arch is sometimes employed, and they possess ornamental features of great beauty. Though small and insignificant when compared with the churches of England and the Continent, and though there is little in them as works of art to occupy the mind, yet they are not wholly devoid of interest; for their peculiar smallness, bearing so striking a resemblance to the early Greek churches, and their rich and beautiful ornament, though like the Norman of England and France to some extent, yet possesses such strongly marked peculiarities that justify us in considering them as a distinct European style.

These buildings are all situated in the county of Kerry; Tralee, the capital of that county, is a short railway journey from Killarney, and Ardfert lies but a few miles beyond Tralee.

---

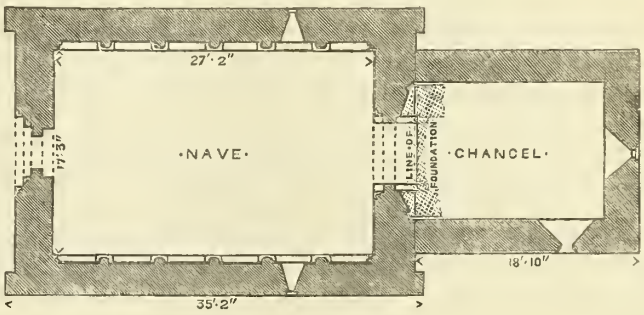
* Petrie, pages 290—1.

† 'Ecclesiastical History of Ireland.' Dr. Lanigan.

In ancient times Ardfert was a place of some importance, and consequently suffered severely, for it is recorded that the Abbey and town were burnt in the year 1089, in 1151, and again in 1179. There are still several buildings remaining here, they are rather prominently situated on the top of a limestone rock, that rises abruptly from the plain beneath. The most ancient of them is Templenahoe —according to the Ordnance Maps.* A few feet to the west stands another rectangular church, Temple-na-Griffin, of recent date, and comparatively of little interest. To the east of these, and occupying the site of a more ancient building stands the Cathedral. In former times there was a Round Tower here, but it fell a century ago, and now no trace of it remains.

The 'Annals of Innisfallen' state that in "A.D. 500, died Carpain, Bishop of Iferte," and from that date it remained a bishop's see, until the year 1663, when it was united to the diocese of Limerick. The name may mean either "the Hill of Miracles" or "the High Place of Ert," Ert or Ercus being a celebrated Bishop, under whom St. Brandon studied when a youth. St. Brandon, to whom the cathedral is dedicated, was born in the year 484, and died on the 17th of May, A.D. 577.

KILMELCHEDER lies more than 35 miles to the west of Tralee, at the extremity of the Dingle headland, and is grandly situated a little way up in the Brandon Mountains, overlooking Swerwick Harbour and the sea. The nave is the more ancient part of the ruin, the chancel being an addition.



The only reference to this place in any of the Ancient Irish MSS. that has come to my knowledge is contained in the very interesting volume that has been published by the Irish Archæological Society, entitled 'The Martyrology of Donegal, a calendar of the Saints of Ireland,' and the days of their celebrations. Under the 14th of May we find the following entry:—"Anno Domini 636, MAOLCETHAIR, son of Ronán, son of the king of Uladh, of Cill, Melchedair, near the shore of the sea to the west of Brandon Hill. He was of the race of Fiatach Finn, Monarch of Erin."

The date must refer to some unrecorded event in the life, or to the martyrdom of this Royal Saint, as there is nothing to connect it in any way with the buildings of the neighbourhood. The only means then remaining to us of obtainining an idea as to the age of this church, will be by comparing it with some structure of which the date is already determined.

Close to the church there exists the ruin of an oratory, that is probably one of the earliest specimens of Christian building in the country. It has an extremely archaic appearance, owing to its gables being inclined almost as much as the walls, and having its roof something of an ogee form. It is well figured, and described in a paper by the late G. V. Du Noyer, to the Kilkenny Archæological Society, and published in the 'Proceedings' for January, 1864.

About a mile below in the valley, stands the most beautifully constructed of these buildings that now remains, and it is absolutely perfect. The gables are upright, and the roof is in the form of a simple pointed arch, and not an ogee like the former, but it is constructed in exactly the same way. Though these oratories are of great interest, in an archæological point of view, as specimens of early

* Petrie, page 133.

Christian stone building, yet they are nothing but huts; for their features are not architecturally treated—one cannot tell where the walls end or the roof begins for example—and they possess no detail of any kind.

Now if we turn to the more ancient part of Kilmelcheder—that is the nave, we find a great step has been taken in advance of these early works; an eaves course—though a simple one—marks the termination of the walls, and gives to the roof its proper dignity. The detail is rich, and executed in a very fine grained sand stone, that I am strongly inclined to think even Caen stone. The stone roof, now entirely disappeared, was constructed on the corbel principle in the same way as the oratories, but was treated with a double slant—like a *Mansard*—tending to ease the thrust into the upright line of the walls. It is not till we examine the chancel—until we emerge another step out of the cloud of antiquity that still surrounds these buildings—that we find the simpler though less scientific expedient adopted of upright walls and slanting roof. The transition is so very evident, from the ogee and simple pointed gables of the oratories to the *Mansard* form of the nave roof, and finally the simple gable of the chancel, that this feature alone would be sufficient to determine the relative ages of the buildings.

In the absence of any conspicuous detail in the chancel, the only feature—except the east window, that can give us any aid, in comparison with other works, is a projecting band of about 9 inches wide, that ornaments the gable on the exterior. [See plate East End.] It is worked in the solid from horizontally laid stones. Precisely the same feature, executed in the same way, occurs in Cormack Castle, Cashel (A.D. 1127-34). And as we do not possess any distinct historical record regarding Kilmelcheder, I think that this feature, together with the general character of the work, is sufficient evidence, sufficient at least for our present purpose, to conclude, that the addition—that is the chancel—is a work of the early part of the twelfth century. There is at present no clue to the date of the original church, but we cannot do its antiquity much violence by ascribing it to the eleventh century, that is about a hundred years older than the addition. And as to the oratories all that can be said regarding them is that they are still more ancient.

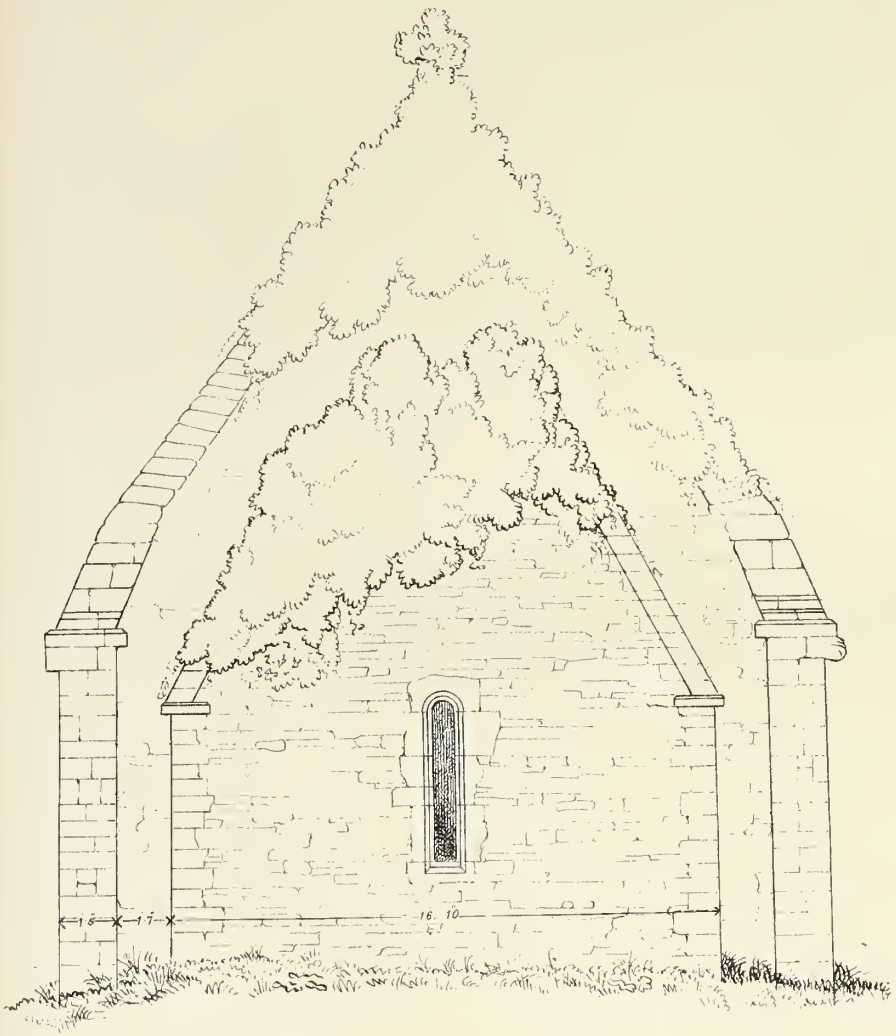
I am not aware that any one has previously attempted to fix a definite date to this building, you must consider therefore that I put this forward in no way dogmatically, but altogether as a suggestion, which I hope others better qualified to give opinions will take up and consider. For this church is a link connecting us with the most ancient remains of the country, and to perfect knowledge every link in a chain must be studied.

The peculiar form of roof employed in the building was evidently a local custom, and derived from the oratories. The arched or vaulted ceiling was frequently used in other parts of the country. That we may be the better enabled to compare these different systems I have enlarged a drawing of a little church at Killaloe near Limerick, from Wilkinson's 'Geology and Architecture of Ireland.' It is an admirable piece of construction, and contains a valuable suggestion to the concrete builders of this nineteenth century.

The entrance to this church, as was universally the custom in the ancient buildings, is in the west end; it is constructed with that peculiarly Irish feature, sloping jambs—the jambs instead of being parallel, incline towards each other; they are treated with angle shafts carrying an arch in two "orders," surrounded by a label moulding that stops above the abacus on heads of animals, and into which a man's head, simply carved, is introduced as a key-stone. [See plate West Door.] The arch is filled with a plain tympanum, carried on piers independent of the arches, on the inside face of which is worked in the solid a grotesque head, that Mr. Keane calls "the head of an ox—the Golden Molach himself," for he says, this building was a temple of Molach, because—as far as I can understand him—the sound of Molach-or is very like Melcheder.*

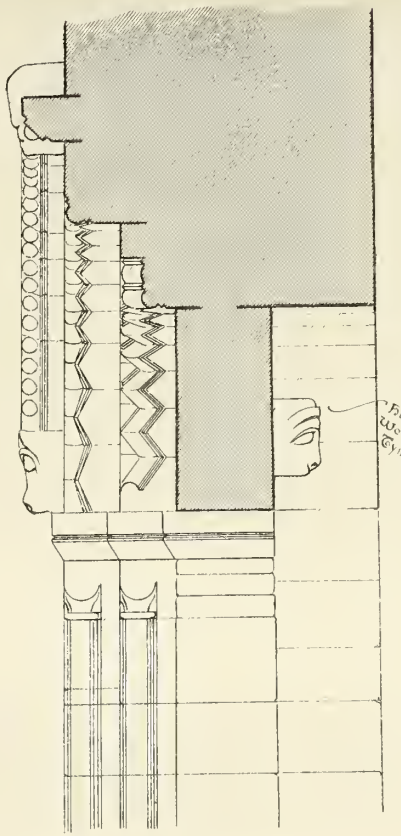
* 'Temples and Towers,' page 23.

Kilmetchedor ... Co. Kerry.

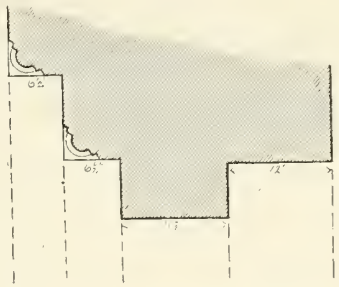


EAST END

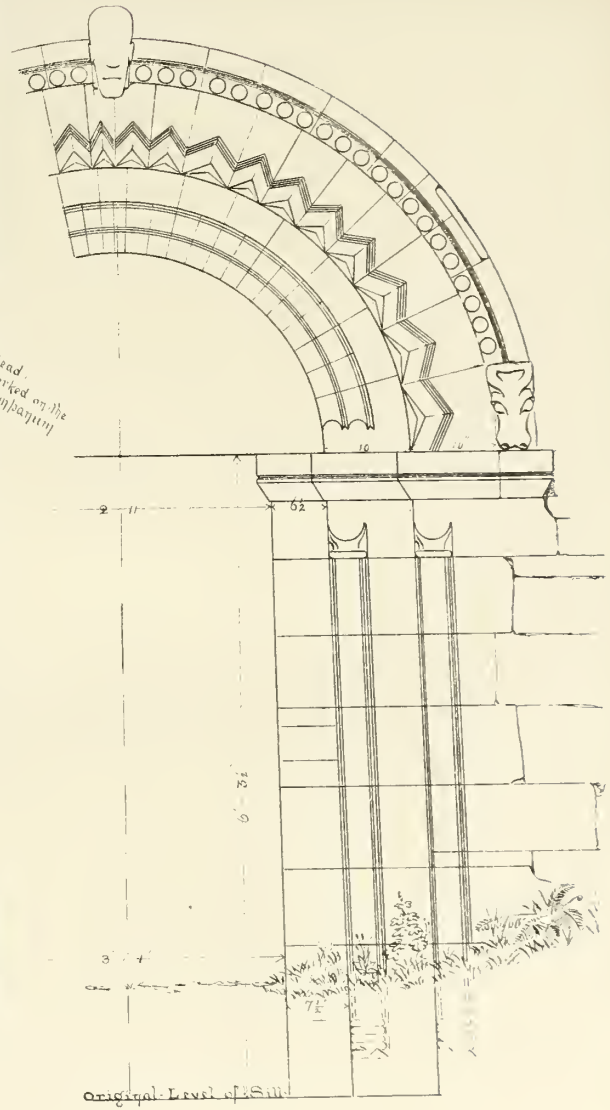
Scale of 0 1 2 3 4 5 6 7 8 9 10 11 12 Feet



Section



Plan



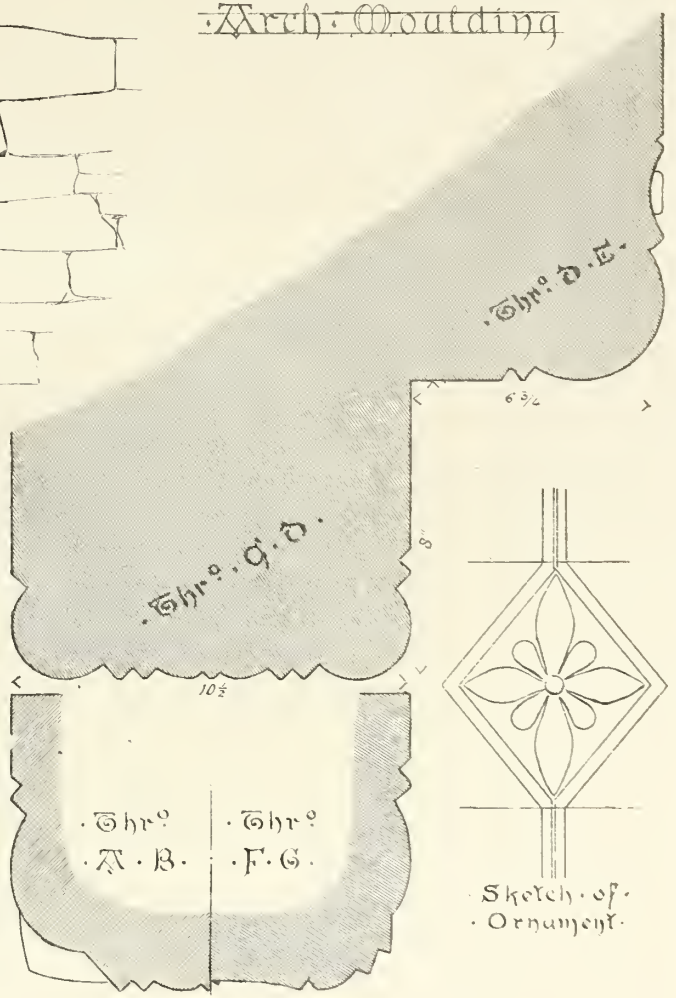
WEST DOOR.

Scale of 0 1 2 3 4 Feet

Photo-Litho.d for the R.I.B.A by Whiteman & Bass, London.

Kilmetcheder

Details of Arch Mouting



Sketch of Ornament

Details of Chancel Arch

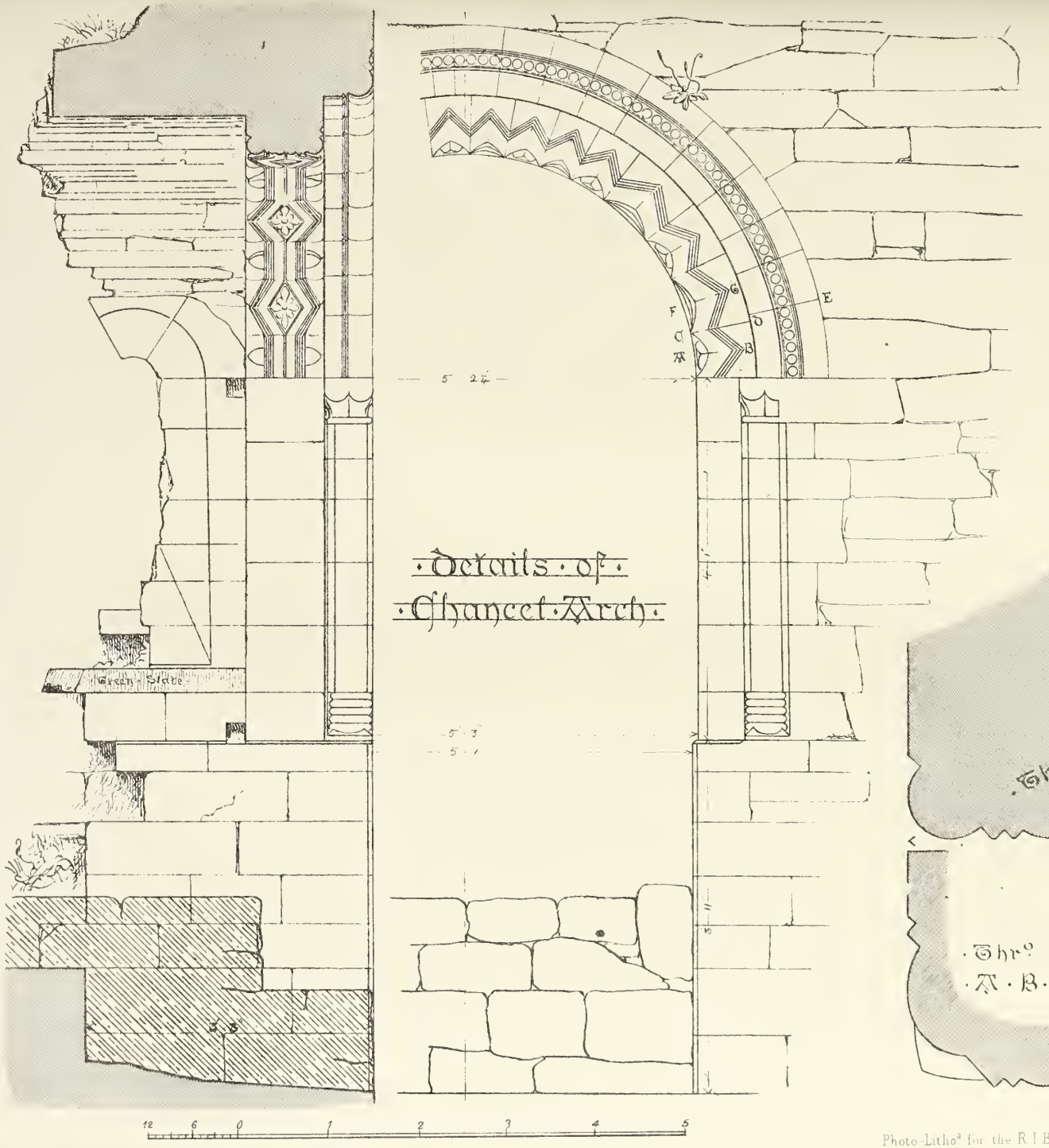


Photo-Litho[a] for the R I B A. by Whiteman & Son[s] Limited

The nave was lighted by two small windows, of scarcely a superficial foot in area, but splayed widely inside to make the most of the little light that entered. There does not appear to have been any preparation made either for glazing or for shutters, and the jambs are sloping both inside and outside. Considerable interest is given to the interior by a range of half round shafts, that divide the side walls into panels, of which the windows occupy the second bay from the east.

According to the original plan, which I had the good fortune to discover on my visit last year, the church was terminated to the east by a small altar recess of only 3 feet 3 inches deep, by the width of the archway—5 feet 1 inch. [See plan and section of chancel arch.] From constant interments the church has been filled up many feet above the original floor level, and especially towards the east. Excavation was commenced under the chancel arch, to get the original levels if possible. At a slight depth below the surface, two steps were discovered that at first sight appeared to be what was sought; but on examination they proved to be a recent work, and were therefore discarded. On removing them at a depth of 3 feet 11 inches below the offset from which the pilasters spring, a solid flay was found, built in under the piers, and evidently the original floor of this portion of the church, and standing about 8 inches above the level of the west door. Two courses of the ancient east wall remain, bonding into the piers, and from the arrangement of the stone joints there can be no doubt that it once existed as high as the offset before mentioned, from which it may either have gone directly to the ceiling on the same plane; or the wall may have receded to the east sufficiently to form an altar at this level, if such a feature was customary in the Irish church of that period. The exterior face of the wall and consequent depth of the altar is altogether conjectural, for some graves interfered so much that they prevented even a search being made for it.

Let me correct a mistake that has been fallen into by Mr. Keane * and others, in miscalling "windows" what are in reality a pair of arched niches, of which one jamb remains inside each pilaster. Windows they could not possibly have been, as they are constructed in the "thickness" of the wall. They are portions of the original scheme of decoration—an arcade; on the same principle that square panels were used in the nave. The chamber was ceiled by a barrel vault, and most likely was finished externally with a simple gable.

The chancel arch is moulded with a large staff, and surrounded by a very charming little ornament, formed by a series of round discs, relieved on a slightly hollow ground. It is very sharply cut, and wonderfully effective, when we consider that the maximum sinking is less than three-eighths of an inch. A pair of simple pilasters, set back a few inches from the face, carry a highly enriched member, almost identical with the inner order of the west door of Ardfert Cathedral. [See detail.] The round moulding is most judiciously placed, where it receives a decided contrast on both sides, making its boldness look more bold, and in its turn conferring delicacy on the ornament: for we see where it has been exclusively employed in modern works, that it falls flat and uninteresting on the eye, not from any inherent defect, but from want of the relief that contrast always gives.

When the present church was added, the east wall of the former termination was removed, but the side walls were allowed to stand, the new part fitting closely over the old like the lid of a box. The east window is quite distinct in its style of treatment from the nave windows, being so much higher in proportion to its width, moulded on the exterior, and constructed with parallel jambs. The peculiar lozenge-formed cross that is now lying broken in the church was blown from the west gable some years ago. Another still exists on the east gable of nave, but smaller in size.

Temple na hoe Ardfert is planned in precisely the same way as the original building of Kilmelcheder, but it is nearly double the size, and probably a little later in date. The altar recess

* 'Temple and Towers,' p. 256 and 419.

has disappeared, though not removed for the purpose of making an addition, as was the case in the other church. The chancel arch is treated in two "orders," and pilasters carrying a third "member" formerly existed, but now altogether lost. There are no angle shafts, but an enriched abacus marks the spring of the arch. The nave was lighted by four small windows, of which one remains on the south side, very much weathered on the exterior, but perfect inside. The jambs of the interior are moulded, and surrounded by a very elaborate band of ornament [see plate], consisting of a series of figures contained in square panels, every one of which is of different design, and all most elegantly composed. The doorway is unusually simple, with no attempt at ornament, except on the label moulding. The jambs incline, and the head is arched, and without a tympanum. The treatment of the quoins is worthy of notice, with bold projecting angle, shafts, and caps, of which three remain; they are all of different design, and very original.

The uniformity of these Primitive Churches in plan is remarkable; the circular or cruciform arrangement is, I believe, entirely unknown; the rectangle with sometimes a small recess to the east, was alone employed. And it is by no means improbable that this simplicity was less the result of poverty or ignorance, than of veneration for some model given by the first teachers of Christianity; and that the use of several small churches, on one site, was a matter of custom, and not due to the incompetence of the people to have erected one large building, if they thought fit.

Examining into the principles that regulate the art treatment of these works, one of the most prominent is the part construction plays in the arrangement of the detail. I ask, should the supremacy of man boldly assert itself independent of stone joints, designing mouldings without reference to the number of stones required to form the work; or should we not rather proceed on the sound rational principle, so thoroughly carried out in these examples, that as a building is an assemblage of separate stones, yielding to each other mutual support, that this individuality should be sustained by our artistic treatment of the detail, giving to each stone such form as shall best distinguish it from its neighbour. In plain language, which should we value the more, the architecture that ignores stone joints, or that emphasizes them. This particular form of ornament, of course is a characteristic feature of the Norman of England and France, as well as of these buildings. But I am now about to mention one or two matters that I believe are peculiarities.

Sloping, or inclining jambs are universally employed in both window and door openings when single. But in cases like the cathedral door, where there are several contiguous arches, sloping jambs would be manifestly impossible; and therefore we must not look for them. This feature, invariable in the ancient buildings, is even to be found occasionally in later works; for example, the thirteenth-century windows in the nave of Christ Church, Dublin.*

Another peculiarity, that hitherto, as far as I am aware, has escaped attention, is in the method of forming the arch; the largest stones are placed at the springing, from which they diminish in size, with nearly perfect regularity, until the "voussoirs" at the crown become even less than half the thickness of the others. You naturally ask, what effect does this produce. Well, it tends to accumulate interest to the highest point of arch; and, when viewed in connection with the sloping jambs, it carries the eye up, and takes away the depressed appearance, so often inseparable from a round arch.

There is altogether so much suggestiveness in these works, that I cannot but recommend them to the study of the architects of the round-arched style of the future; of which we sometimes hear so much and see so little.

The Cathedral of St. Brandon Ardfert, is a very fair example of the general character of

* 'Gentleman's Magazine,' Jan. 1864, page 13.

Detail of Moulding & Ornamental Band to Window

Templenahoe + Aredfert

SECTION THROUGH MOULDINGS.
¼ FULL SIZE.

Photo-Lith^d for the R.I.B.A by Whiteman & Bass, London.

Anglo-Irish building—the second great division of Irish architecture. The precise date of its erection I have not been able to discover; but that it is a work of the thirteenth century is evident, and fully sustained by comparison with an adjacent Franciscan Friary Church, that was founded by Thomas Fitzmaurice, the First Baron of Kerry, in the year 1253. The cathedral incorporates into its structure two fragments of more ancient buildings. A portion of the north wall consists of some very remarkable masonry, formed with huge blocks of limestone. And the west door and arcade is also ancient work, being the only portion that remains of the original cathedral; and from its great beauty, causing us to regret the destruction of the rest. This doorway evidently stands on its original foundation, otherwise it would not have been so curiously placed as it is, in the extreme north of the west front.

The original plan of the building was a simple rectangle, 137 feet long by only 25 feet in width; and an aisle on the south-west, opening by three arches into the nave. In later times a large transept was added on the south side; and a chantry and mortuary chapel, with a short aisle, was built on the north side of choir; and, probably at the same time, that heavy double embattlement, a peculiarly Irish feature, was put up for the purpose of defence.

The nave of this Cathedral, like the ancient churches, is remarkable for the small quantity of light that was considered sufficient. There are but two small windows in the whole of the north side, and previous to the addition there were three of the same size on the south side, but two of them were closed up at that time. There may have been a few simple lights in the south aisle, but the west gable was entirely without a window of any kind; so that this end of the building must have been very dark. However, we have no cause to complain of want of light in the choir, for on the south side there is a range of nine lancet windows, and there are three grand lights in the east end, the centre one being nearly 30 feet high. And the effect of light, and no doubt of colour also, being so much enhanced by the darkness of the nave, must have been very fine.

The architectural treatment of the choir is extremely good, both in general lines and in detail, the latter is especially bold and simple. The foliage carving of caps is also very original in character. It was enclosed from the nave by a wooden loft or screen, but not so high as to interfere with the view of the great windows; for a pair of corbels remain on each side marking its position. This part of the building, so interesting to an architect, I am sorry to say is in a most dangerous condition; the heavy embattlement placed upon walls, structurally weak, has done great injury. And now the south-east corner is entirely upheld by a noble square buttress, without which the choir would have fallen long ago.

A feature exists in the thirteenth-century work, to which no one has been able to give a satisfactory solution. You will pardon my mentioning anything so trivial, but it is very curious. I refer to the number of carefully built holes that exist, of about 9 or 10 inches square, and going right through the walls. If they were "putlog-holes," why were they not closed up, or if they had been, why are they now all open?

This building is an average example of a class of structures, evident off-shoot of the English school of building, but very much inferior to the noble works of the parent stem, produced about this period. And the same interest does not attach itself to these as to the other class of Irish work, so much more ancient, and with some claims to be considered a distinct school of art in themselves. You will therefore forgive my somewhat hasty description, and permit me to conclude, with what I fear I need—an apology for the incompetent manner in which an important subject has been treated. I trust you will regard this paper, not as a definitive essay, but as the opening of a debate, and that some of the learned gentlemen, who have heard me so far, may advance where I cannot tread, comparing Continental buildings with the Irish style, and criticising—not my work, but the churches themselves.

Professor KERR, Fellow.—I have very great pleasure in proposing a vote of thanks to Mr. Arthur Hill for his paper. My own attention has been chiefly attracted by the descriptions given of the peculiar structure of the arches in Ardfert Abbey. It is the first time in matters of this kind that I have seen anything like what I take to be a notion of the equilibration of an arch introduced in architectural form. I look upon the peculiarity of these arches to be, not as Mr. Hill supposes, merely an effort to produce an artistic effect of lightness at the crown, but rather an effort, by rule of thumb no doubt, to produce (if I may suggest so on the spur of the moment), that which used to be the great problem, for instance, in stone bridges, namely, an equilibrated arch, which should theoretically retain its form without any support other than that derived from its own forces. At any rate, just as the equilibrated circular arch increases in depth of voussoir from crown to springing, so in this case, although I do not mean to say that mediæval builders understood the scientific principle, I think the gradation of size in the arch stones may be fairly looked at as suggesting some sort of rude idea in the same direction.

Mr. W. FOGERTY.—I feel bound to record my sense of the accuracy with which Mr. Hill has brought this subject under our notice, and I can fully endorse the closing observation of the paper—that Irish ecclesiology remains to be investigated; but when I have tried to induce my English friends to visit us, I have been told by them, "after going a hundred miles we only get to a round tower." I am afraid the idea has prevailed, that when a person enters upon the study of ecclesiology, it is done with the practical end to gain some materials to be worked into modern practice, and that may be case; but still there are certain advantages connected with the study of Irish architecture which ought not to be forgotten ; one is, that the stone principally used is a hard blueish limestone, which is almost as perfect and as sharp as when it was first executed. Mr. Hill has done good service, I think, in classifying the buildings in Ireland—first, there come those which were erected anterior to the English invasion, or rather annexation, and then those subsequent to it. The buildings previous to the Anglo-Norman annexation bear a close relation to buildings of the same date in England, and some of those on the western shores of France and Brittany, while the ornamentation has much that is identical with the Romanesque Churches of the Rhine. Any person who looks at the old Irish crosses, and the ability displayed in their design and execution, will hardly conceive that it was impossible that the men who designed them were not also capable of erecting stone churches, and several of them must have been erected in the eighth or ninth centuries. The buildings subsequent to the Anglo-Norman annexation do not coincide so much with those on this side of the channel ; there are marked differences in them, and I think the services of the Irish churches considered, the ecclesiastics of high rank who ruled there were anxious to impart a continental feature to their buildings, in order to keep up some sort of nationality. No one can look at these buildings without being struck with the difference between them and those in England. There are the twisted columns which one sees in Spain in the cloisters at Verona, with which we find little corresponding in England, and the Church of the Holy Cross at Thurles in Tipperary, is very much like that of St. John Lateran at Rome. I hope Mr. Hill will not be content with illustrating two or three of these buildings, but that he will take advantage of his position in the county of Munster to investigate some of the interesting ruins that are to be met with there.

Mr. W. WHITE, Fellow.—I do not think any one has seconded the vote of thanks, and I shall be happy to do so. I have myself travelled through a great deal of the south and west of Ireland; I met there with a great deal that interested me very much. In fact I had began to look up a few notes to lay before the Institute, but other things put them out of the way. I may find an opportunity of doing so on a future occasion, if it should be considered of sufficient interest. If I understand Mr. Hill aright the peculiarity of the arch he has referred to is, not that the intrados and extrados are not parallel, but simply that the size of the stones increases towards the springing; of course in these stones first

fixed they have much less liability to tilt over or become displaced, and it was natural to put the larger stones where they could be most readily fixed; but I understand Mr. Hill to say he was not aware of any such instance as that in English architecture. I think, however, if he looks at many of the pointed arcades of English churches he will find that the stones do decrease in size from the spring, in the same manner as in the case he brings before us. In pointed arches this feature is especially noticeable. Also I think he will find the same thing in many of the Norman churches, though not to such an extent perhaps as in some of the Irish churches. Perhaps Mr. Hill will be good enough to give us a little more explanation with regard to the small chancel he has pointed out, which I think he calls a restoration. I thought it was the ancient apse. I did not gather the authority for that. I have asked for the authority before saying a word about it, because Mr. Hill referred to the Greek church, and that plan seemed so evidently following, in one respect, that of the Greek church. At the same time it does not seem to follow the arrangement as to the prothesis of the third and fourth centuries of the Greek church. With regard to the plan of Ardfert, which must have been always a noble church, perhaps Mr. Hill will be good enough to explain what that old piece of wall is, in the centre of the north wall, because it seems to be linted as an ancient nave. As far as I can see, the great west doorway was the centre of the earlier church, and that part must have been an opening, subsequently walled up, the greater portion of the church being of a later date, the *centre* of the building being changed from that of the old doorway to it present site.

The PRESIDENT.—I am sure there will not be two opinions upon the resolution of thanks which has been proposed. Though born in Ireland I must plead guilty to having little knowledge of Irish antiquities, but from what we have heard to-night, the subject is so full of interest, that I can easily imagine it to be a most fascinating study.

The vote of thanks to Mr. Hill was unanimously accorded.

Mr. ARTHUR HILL, having acknowledged the compliment paid him, said—The authority for the little chancel is to be seen in the foundation of its east wall, of which two courses still remain. That it was an *altar* recess is but a conjecture, and I cannot but feel Mr. White's suggestion to be more likely, namely, that it was used to contain the seat of the priest. As to the masonry in the north wall, its position, almost in the axis of the original cathedral, precludes the idea of its being of that period, and as it is entirely surrounded by thirteenth century work, it evidently cannot be of that date, and is therefore intermediate. I hope this subject, imperfectly treated though it has been by me, will at least give rise to some interest in Irish structures, and induce some of my hearers to try if anything more than a "round tower" is to be seen in the country.

ON THE ADMEASUREMENT OF SKY IN CASES OF LIGHT.

By E. Wyndham Tarn, M.A., Associate.

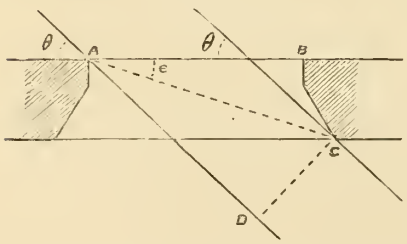
At a meeting of the Institute on the 30th of April, 1866, a paper was read by Professor Kerr, entitled "Remarks on the Evidence of Architects concerning the Obstruction of Ancient Lights, and on the Practice of Proof by Measurement;" in which the Professor explained his system of measuring the loss of light which would be sustained by a window in consequence of the erection of a lofty building opposite thereto. In this system the sky-surface seen from an unobstructed window is supposed to be represented by an equally-illuminated quarter-sphere, which is divided by circles of latitude and longitude into a number of segments; and the value of the light from each segment as seen from the window (supposed to be placed at the centre of the quarter-sphere) is found by calculation, and is figured upon the segment. When it is required to find how much light is cut off from the window by any proposed building; its vertical and horizontal distances therefrom, together with the angle which a line drawn from it to the window makes with the plane of the window, enable us to find how much of the sky-surface is obscured, and to calculate by simple addition its value as compared with the whole unobscured sky-surface.

In June and July, 1869, Mr. Homersham Cox published in 'The Architect,' and afterwards in a separate volume, what he called "The Law and Science of Ancient Lights," in which he alluded to Professor Kerr's paper in the following terms:—"Mr. Kerr wholly neglects the fundamental principle of diminution of intrinsic illuminating effect due to obliquity of rays, and his calculations are utterly at variance with the principles both of optics and geometry, and are not in any degree approximations to correct results."

In consequence of these remarks of Mr. Cox, Professor Kerr requested me to examine into the subject from a purely mathematical point of view; and the results of my investigations I now propose to lay before the Institute as briefly as possible.

To determine the relative illuminating power of various portions of sky-surface with respect to a vertical window.

Fig. 1.

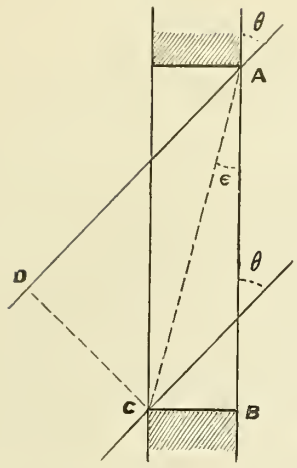


1. Let Fig. 1 represent the plan of a window into which light from the sky-surface is entering in the direction of A D, making with the wall the horizontal angle θ. It is evident that as the angle θ varies the amount of light which enters also varies, and is in fact proportional to the width D C, or to the *sine* of the angle D A C, or of the angle $\theta - \epsilon$; ϵ being the fixed angle B A C, which for ordinary windows is about 10°. Then, if we call $d\theta$ the differential or indefinitely small increment of θ, the value of light from any portion of sky at a horizontal angle between the limits α and β is proportional to

$$\int_{\alpha}^{\beta} \sin \overline{\theta - \epsilon} \, . \, d\theta = \cos \overline{\alpha - \epsilon} - \overline{\beta - \epsilon}$$

the angles α and β being measured from the extreme right or extreme left towards the meridian.

Fig. 2.



2. Next, let Fig. 2 represent a vertical section of the window, A D the direction of light making the angle θ with the vertical. Then, as before, the value of the light which enters is proportional to D C, or to $\sin \overline{\theta - \epsilon}$; and in this case we may take ϵ as 5° for an average window. The same formula therefore applies as was obtained for the horizontal rays, except that $\epsilon = 5°$ instead of $\epsilon = 10°$.

3. Let us now divide the quarter-sphere of sky-surface by lines of latitude and longitude at distances apart of 5°, and calculate the several values of $\cos \overline{\alpha - \epsilon} - \cos \overline{\beta - \epsilon}$ for every 5° both vertical and horizontal; giving ϵ the above-named values. The relative numbers for every 5° horizontal, measured from meridian to 80°, are

85, 83, 81, 77, 74, 69, 64, 60, 53, 47, 40, 33, 26, 19, 11, 4. - - - - (A)

And for every 5° vertical measured from horizon to 80° of altitude, the numbers are

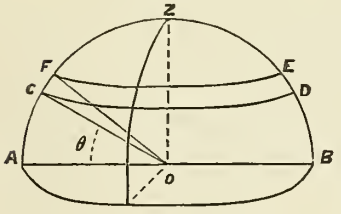
86½, 85, 83, 81, 77, 74, 69, 64, 60, 53, 47, 40, 33, 26, 19, 11. - - - - (B)

We must now multiply each of the set (A) by each of the set (B), so as to obtain the relative value of light from equal areas of sky-surface according to the angle which its direction makes with the plane of the window.

4. We have next to consider the relative values of the sky-surface itself independently of the angle at which the light therefrom is received at the window. If we divide the sphere into zones of equal angular width, their relative areas will be unequal; and by geometry we know that the length of any small circle of the sphere, C D (Fig. 3) is the length of a great circle A B multiplied by the cosine of the angle of altitude; that is,

$$C\,D = A\,B.\ \cos \theta.$$

Fig. 3.



Now, take a very small zone, C D E F, which subtends at O the differential angle $d\theta$; then, the relative area of any zone between the angles λ and μ will be represented by

$$\int_{\lambda}^{\mu} \cos \theta \ .\ d\theta = \sin \mu - \sin \lambda$$

in which the angles λ and μ are measured from the horizon A B towards the zenith (Z). Calculating the value of this formula for every 5° of vertical angle we have the series of numbers,

87, 86½, 85, 83, 81, 77, 74, 69, 64, 60, 53, 47, 40, 33, 26, 19. - - - - (C)

The numbers obtained as the products of the series (A) into the series (B) must be multiplied by the numbers in series (C) according to the several zones. The Table 1 is formed in this manner, the numbers being reduced to their lowest proportional amount.

5. In calculating Table 1, we have supposed that the value of light emitted from any portion of sky-surface is exactly proportional to the area of that portion, in whatever part of the sky it is situated. Let us now suppose that the illuminating power of *equal areas* of sky-surface increases from the horizon towards the zenith as the *sine* of the angle of altitude. Then the illuminating power of any zone is expressed by

$$\int_{\lambda}^{\mu} \cos\theta \,.\, \sin\theta \,.\, d\theta = \tfrac{1}{2}\,(\sin^2\mu - \sin^2\lambda)$$

Calculating this formula for every zone of 5° from the horizon up to 80° of altitude, we obtain the numbers,

8, 23, 37, 50, 62, 71, 79, 84, 87, 87, 84, 79, 71, 62, 50, 37. - - - - (D)

The numbers obtained as the products of the series (A) into the series (B) must be multiplied by the numbers in series (D) according to the several zones. In this manner the Table 2 is obtained.

6. The object of forming these Tables is to enable us to calculate the relative value of the light abstracted by the erection of any new building so as to obscure any portion of the light previously accessible to a given window. For, by measuring the vertical and horizontal distance of such object from the window, and also the angle which a line therefrom makes with the plane of the window, we can at once determine its position on either Table, and calculate the number and value of the segments of zones which are obscured thereby.

7. Mr. Homersham Cox has published a method of investigating the relative values of sky-surface and the loss of light occasioned by any obstacle. The conclusion at which he arrives amounts to this, that *whatever portion* of sky surface is obscured, the loss of light is exactly proportional to the *area* of that *portion;* or, in other words, that the value of the light from *any* equal areas of sky-surface is exactly the same no matter at what angle it falls on a window. Hence it appears that Mr. Cox himself "wholly neglects the fundamental principle of diminution of intrinsic illuminating effect due to obliquity of rays." Any mathematician can see this at once from the methods which he adopts and the formulæ which he obtains; for it is well known that the *areas* of the several zones into which the quarter-sphere is divided by "small circles" at angles of altitude, say, α and β, are proportional to the values of the formula

$$\sin\beta - \sin\alpha$$

Now they are the several values of this very formula that Mr. Cox has tabulated and called the "relative illuminating effects of every 10° of sky." Also in measuring "lateral obstructions" he states that "the quantity of light lost is directly proportional to the angular altitude of the obstacle above the aperture." Now it will be seen, by reference to his diagram, that this obstacle cuts a spherical triangle out of the quarter-sphere, which triangle has 2 right-angles, consequently its *area* is proportional to the "angular altitude," that being the angle called in spherical trigonometry the *spherical excess*. Mr. Cox's conclusions thus appear to contradict the very principles on which he professes to ground his investigations.

TABLE 1.—*Relative values of light entering a vertical window from different parts of sky-surface, on the hypothesis of an* EQUAL *diffusion of light.*

Value of each Zone.	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°
206 $_{75}$	21	21	20	19	18½	17	16	15	13	12	10	8	6½	5	3	1	
469 $_{70}$	48	47	46	44	42	39	36	34	30	27	23	19	15	11	6	2	
826 $_{65}$	85	83	81	77	74	69	64	60	53	47	40	33	26	19	11	4	
1258 $_{60}$	130	127	124	115	110	106	98	92	81	72	61	50	40	29	17	6	
1775 $_{55}$	183	178	174	165	158	148	138	129	114	101	86	71	56	41	24	9	
2348 $_{50}$	242	235	229	218	209	195	181	170	150	133	113	93	74	54	31	11	
2989 $_{45}$	308	300	293	278	268	249	231	217	193	170	145	119	94	69	40	15	
3604 $_{40}$	372	363	354	337	324	302	280	262	232	206	175	144	114	83	48	18	
4177 $_{35}$	430	420	410	389	374	349	324	304	268	238	202	167	130	96	56	20	
4730 $_{30}$	492	480	468	434	416	387	358	347	307	272	231	191	150	110	64	23	
5351 $_{25}$	551	538	525	499	480	447	415	388	343	304	259	214	168	123	71	26	
5845 $_{20}$	591	577	563	546	525	489	454	425	376	333	284	234	207	135	78	28	
6299 $_{15}$	648	633	618	587	564	526	488	458	404	358	305	252	198	145	84	31	
6641 $_{10}$	673	669	652	620	596	556	516	483	427	379	322	266	209	153	88	32	
6916 $_{5}$	712	695	678	645	620	578	536	502	444	394	335	276	217	159	92	33	
7074 $_{0}$	727	710	693	660	634	591	548	514	454	403	343	283	223	163	94	34	

MERIDIAN — HORIZON

60508 = total value of half sky-surface.

TABLE 2.—*Relative values of light entering a vertical window from different parts of sky-surface, on the hypothesis of a* VARIABLE *diffusion of light.*

Value of each Zone. 80	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70	75°	80°
206 75	21	21	20	19	18½	17	16	15	13	12	10	8	6½	5	3	1	
492 70	51	49	48	46	44	41	38	36	31½	28	24	20	15½	11	6½	2½	
826 65	85	83	81	77	74	69	64	60	53	47	40	33	26	19	11	4	
1214 60	125	122	119	113	109	101	94	88	78	69	59	49	38	28	16	6	
1628 55	MERIDIAN 167	164	160	152	146	136	126	118	104	93	79	65	51	37	22	8	
2034 50	210	205	200	190	183	170	158	142	131	116	99	82	64	47	27	10	
2375 45	244	239	233	221	213	198	184	172	152	135	115	95	75	55	32	12	
2697 40	278	271	264	251	242	225	209	195	173	154	131	108	85	62	36	13	
2775 35	286	279	272	259	249	232	215	202	177	158	134	111	87	64	37	13½	
2814 30	290	283	276	262	252	235	218	204	180	160	137	112	89	65	37½	14	
2711 25	279	272	266	253	245	226	210	197	174	154	131	108	85	62	36	13	
2469 20	254	248	242	230	221	206	191	179	158	143	120	99	77½	55½	33	12	
2091 15	215	210	205	195	187	175	162	152	134	119	101	84	66	48	28	10½	
1587 10°	163	160	156	148	142	133	123	115	102	90	77	63	50	36½	21	7½	
1007 5°	104	101	99	94	90	84	78	73	65	57	49	40	32	23	13	5	
362 0°	37	36	35	34	32 HORIZON	30	28	27	23	21	18	15	11	8	5	2	

27288 = total value of half sky-surface.

E. WYNDHAM TARN, M.A.

The following Tables (3 and 4) are formed in the same manner as Tables 1 and 2; the only difference being that in these the quarter-sphere is divided into segments measuring 10° each way, whilst in Tables 1 and 2 it is divided into segments measuring 5° each way.

These tables will be found sufficiently accurate for ordinary calculations, but where great nicety is required, the Tables 1 and 2 should be employed.

TABLE 3.—*Illuminating power of sky-surface uniform throughout.*

Value of each Zone. 80		0	0	0	0	0	0	0	0	0
54·4 70	M	11	10·4	9·4	8	6·6	5	3	1	0
174 60	E	35·5	33·3	30	26	21	15·4	9·6	3·2	0
335·6 50	R	68·4	64	58	50	41	29·5	18·5	6·2	0
544 40	I	111	104	94	81	66	48	30	10	0
748·1 30	D	153	143	130	111·5	91	66	39·6	14	0
944 20	I	195	180	163	140	114	83	52	17	0
1088 10	A	222	208	188	162	132	96	60	20	0
1177 0	N	240	225	204	175	143	104	65	21	0
5065 Total.		H	O	R	I	Z	O	N		
		10	20	30	40	50	60	70	80	

TABLE 4.—*Illuminating power of sky-surface varies as the* SINE *of the altitude.*

Value of each Zone. 80		0	0	0	0	0	0	0	0	0
54·4 70	M	11	10·4	9·4	8	6·6	5	3	1	0
157·5 60	E	32·6	30·5	25	24	19·4	14	9	3	0
273·3 50	R	56	52	47	41	33·3	24	15	5	0
387·9 40	I	79	74	67	58	47	34·4	21·5	7	0
431 30	D	88	82	75	64	52	38	24	8	0
397·3 20	I	81	76	69	59	48	35	22	7·3	0
294·6 10	A	60	56	51	44	36	26	16·3	5·3	0
104 0	N	21	20	18	15	13	9	6	2	0
2100 Total.		H	O	R	I	Z	O	N		
		10	20	30	40	50	60	70	80	

The PRESIDENT.—I am sure we shall all feel exceedingly grateful to Mr. Tarn for the research, ability and labour he has bestowed upon his paper. Happily, it is in print, and we shall be able to study at our leisure those abstract and careful calculations which he has brought before us. I will now invite any observations that gentlemen have to make upon the paper.

Professor KERR, Fellow.—Although it is impossible for any of us at present to follow these calculations in all their detail, it is nevertheless quite evident that the subject has been treated by one who knows what he is talking about. For my own interest in the matter I may say that, feeling somewhat anxious about a certain contradiction respecting the mode of calculation which I had some years ago introduced (by way of a remedy for the previous confusion of opinion upon a point which practically is of great importance to architects), I ventured to ask Mr. Tarn, who is an accomplished mathematician, to go into the question carefully. He has done so with even greater elaboration of minutiæ than I expected. He has produced formulæ and tables so elaborate, indeed, that we may find it difficult to apply them; although, of course, to prove the accuracy of their results nothing can be too elaborate. I am happy to say the conclusions of Mr. Tarn are to be taken to have fully verified the less elaborate table upon which I had been working, and which I shall be glad, for the information of members, to append to this part of our Transactions. I must explain that it is not the same table published in my little Treatise on Ancient Lights, but an amended form reduced to a square of 10 degrees, which I have used for the last three or four years, and which, I thought, I had made public long ago. Mr. Tarn thus far confirms both my theory and practice; but he also points out that there is another table founded upon scientific theory which bears upon a certain graduated value of light vertically, increasing upwards towards the zenith. That is a principle which practically I have not left unconsidered, but I do not understand its force. However, I believe I may say that, practically speaking, it is found to make little difference in the ultimate results of actual cases whether the one table or the other is used, although there is an appearance of considerable difference between them. I am, however, willing to admit that in some instances Mr. Tarn's second table may have special application in preference to his first, the one which corresponds with mine. I have here to produce a glass model of a quarter sphere of the sky (a portion of a common glass shade) outside an opening which represents a window. The quarter-sphere is divided by parallels of latitude and longitude; and by the tables now before us each section has a demonstrated value. Now any gentleman taking this model in his hand and looking through the window aperture will see represented on the glass a certain prospect of old buildings tinted black, and a certain other sky line of new buildings tinted red: that is he can compare at a glance the old state of things and the new, and the conclusion so far is irresistible. It is then a matter of simple calculation to determine from the tables of value of these squares what is the exact proportion of the formerly exposed sky which is covered by the new building as represented. Or otherwise. We can represent on a drawing of plane projection what this represents on the sphere; we make the same arithmetical calculation and arrive at the same results, which, I beg leave to say, after many years' experience, it is now proved to be perfectly idle to dispute.

Mr. W. WHITE, Fellow.—There is one point in connection with this question in which it strikes me the views I have held are correct; but I wish to be corrected if I am wrong. I would ask Mr. Tarn whether he has found the calculations I made subsequent to Professor Kerr's paper nearer to his own than those of Professor Kerr.* And there is another point with regard to the illuminative power of sky surface. That (*illustrating on the board*) being the zone of atmosphere, there can be no doubt that in our climate, whatever it may be at the Equator—and there probably it makes no

* See note at page 169.

difference — the light is greatly diminished by its having to pass through a greater amount of atmosphere towards the horizon. That is a point apart from the illuminating power of the sun which makes a greater difference in the light.

Mr. PHÉNÉ SPIERS, Associate.—Perhaps I may be allowed to state that, having drawn a comparison of the tables of Mr. Tarn with those of Professor Kerr, I have found the results to be nearly the same, the difference being so slight as to be lost sight of altogether in the parts of measurement one is obliged to make in these questions; and also that in calculating the relative loss of sky surface by means of Mr. Tarn's tables and Professor Kerr's I find great difficulty with the former in consequence of their large number: I think it would be advisable to reduce them to the same number as Professor Kerr's, so as to apply them practically to the measurement of sky surface. As to the diminution of light and the greater power of light as it approaches the zenith, I have made calculations with the other tables prepared by Mr. Tarn, and found it came almost precisely the same, the fact being that the small area of the zenith was so slight, the difference of calculation was not worth consideration. This would apply, however, only to town cases. Mr. Tarn also had made some experiments to see if there was a difference in the real value of light at the horizon and the zenith, and as far as I could judge, looking through tubes, there was a noted difference in the quantity of light when the latter was vertical and when it was horizontal. That may have arisen from the peculiarity of the atmosphere of London, and is not to be taken as an example applicable to the country; but these cases of light and air occur more often in London than elsewhere, and it is as well to know it makes no difference which principle is taken.

Professor KERR.—I would ask whether Mr. Tarn considers this increasing value of the light towards the zenith to be due to what Mr. White suggests as to the loss of light from the horizontality of the rays. [Mr. TARN.—I think not.]

Mr. JENNINGS.—I have not gone into these matters as questions of calculation, because all my experience has been on questions of fact in connection with light under the peculiar circumstances, which are very variable. I have no doubt these calculations are accurate and precise, but at present we are in this position:—There is a Bill now in Parliament which, amongst other things, professes to deal with the question of light. Whether it is to be the national mode of dealing with it, it is of importance to architects to consider. As far as I understand it, it will do away with all claim for light to any angle more than 45° in every direction. They propose, if you do not interfere with your neighbour's light, other than at that angle, you shall do so. It appears to me, in practice in London, 45° is a very fair angle for the purpose. I quite feel that light derived perpendicularly is immensely better than light derived lower down. I am not prepared to enter fully into the subject, as I have never had occasion to consider it except in the individual cases in which I have been engaged, where the light has been interfered with.

Mr. SPIERS.—How could you get light into a window with a perpendicular wall in front of it?

Mr. JENNINGS.—The light would come in at angles measured from the window to the sky in front and on the sides.

Professor KERR.—With regard to the new Building Act, unwilling, as I happen to be, to sign a certain petition against it on other grounds, I certainly must do so on the ground of that proposed rule of 45°, which Mr. Jennings has just described.* I will show you how such a rule would operate, and has too often operated in the judgments pronounced by unscientific surveyors. Suppose a window has

* I find, on referring to the Bill, that the clause proposed has no further application than to give power to the Board of Works to bring forward an old frontage line within the limit of an angle of 45° vertically. [R. K.]

an unlimited exposure—first, the sky is to be covered vertically to the line of 45°, there may be no harm done. But secondly, the sky may be covered on the right-hand side up to the zenith to 45° laterally, and a good deal of harm may be done. Then, thirdly, the left-hand sky may be covered up to the zenith to 45°, and the absurdity of the idea is plain. Otherwise, suppose a window derives its light from sky already wholly covered along the front and further covered to 45° beyond the front—in all, 135° covered laterally and 45° alone exposed—this rule would, of course, allow the covering of the remaining 45°, and the total extinction of the light! However, let me explain to you what the rule of 45° really is. It has always been a general idea in London that houses ought not to be built of a height greater than the width of the street. Accordingly, builders have got into a way of so arranging windows, and so determining the size of them, as to agree, by instinct rather than calculation, with this universal notion. Well, given the street so wide and the houses so high, there is the angle of 45°, and the rule goes no further. But if you carry out the same rule sideways it is impossible to tell on what principle it can apply. Therefore I submit it would be a most fatal principle to propose to establish in any Act of Parliament. [Mr. JENNINGS.—But you would not get the angle of 45° at the sides.] I have known scores of surveyors make affidavits on the rule of 45° taken in any way whatever, and in all circumstances alike.

Mr. JENNINGS.—The new Building Act goes on the principle that you have a plane of 45° for your window jambs, and in elevation you must have 45° also; the practical effect of which is to give a circle of 45°.

Professor KERR.—That is different altogether from the advice offered by this Institute to the Board of Works, viz., that disputes should be prevented as far as possible, but not that any empirical rule like this should be laid down. We proposed the introduction of a clause into the Bill whereby these disputes as to light and air should, like those as about party-walls, be referred to competent surveyors for decision. This Institute never countenanced the monstrous proposition of an empirical rule of 45°.

Mr. SPIERS.—Mr. Jennings says light from the zenith is more powerful than that from the horizon, but the amount of sky surface is much smaller, and therefore, being smaller, is of less value.

Mr. JENNINGS.—The second 6 feet from the ground is more valuable than the 6 feet from the ground.

Mr. SPIERS.—If every one of these squares has a fixed value it does not matter where you take it.

Mr. JENNINGS.—You start with the thing clear—nothing obscured—and if I understand you, the 6 feet fence or wall interferes with more light if you make it 12 feet than if it were 6 feet high.

Professor KERR.—There are two principles set up by scientific enquirers; the first is, that, value for value, a unit of sky above and a unit of sky below give equal light; the other is, that, owing to something which I, for one, do not understand, the unit increases in value upwards from horizon to zenith. Therefore, when you say the sky, at some particular level, is of *no* value—

Mr. JENNINGS.—I say, practically, at that distance you do not take away the light of the window from the ground floor when you have got a garden wall in front.

Professor KERR.—I have no doubt what you mean may be practically correct. No practical damage can result below any given level, provided you have sufficient exposure above; but suppose the light at the top were obscured, as by a verandah, you cannot say that you would get no light from below. Practically, the sky towards the horizon is always covered. [Mr. SEDDON.—Does it make any difference where the sun is?] No. The supposition is adopted of an average dull English day; and then, as there is no sun seen, there is an equality of light all around, and then there is the obscuring of light through radiation. If you take this perfectly dull day you admit an equal reflection of light through

the atmosphere from horizon to zenith. [Mr. TARN.—I do not find it so by experiment.] All depends upon the perfectly dull and cloudy condition of the atmosphere. In that case I must consider that we have an equally powerful reflection all over the sky-surface—and that is a fair average condition of things in this country as applying to those times of the year and those times of the day when the question of damage to lighting is really most important.

The discussion having been then brought to a close, a vote of thanks was unanimously passed to Mr. Tarn for his paper, after which the meeting adjourned.

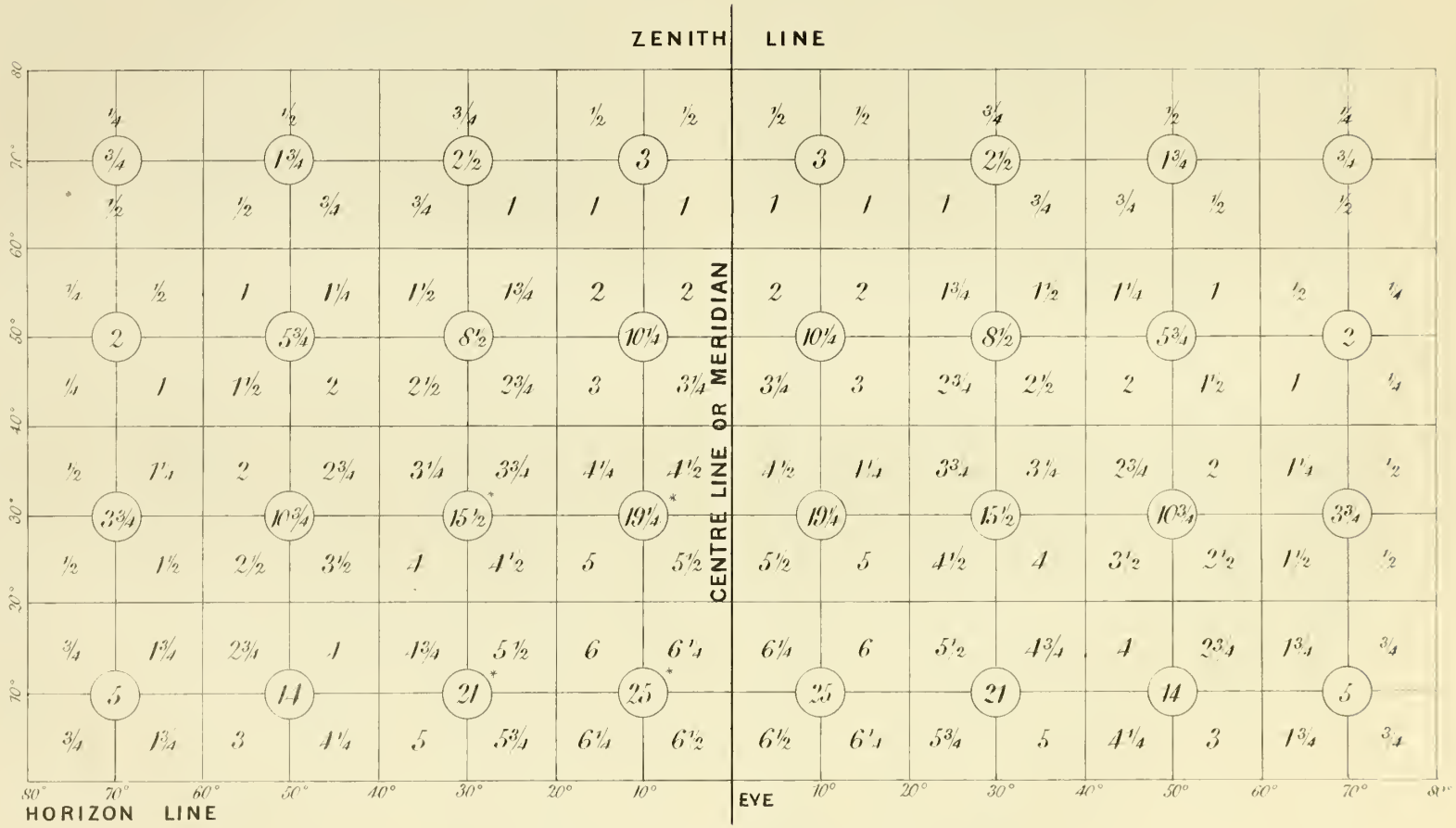
NOTE.—Since reading the above paper, I have calculated the value of the several squares of $22\frac{1}{2}^{\circ}$, in order to compare the figures with those given by Mr. White in his paper read November 19, 1866. I find a considerable amount of divergence, as shown below. E. W. T.

Mr. White's Table.					*Mr. Tarn's Table.*		
·3	·7	·9	1	1	·8	·4	·1
1·9	4·4	5·5	6·2	10·4	8·0	4·7	·6
3·5	8·1	10·1	11·3	24·0	18·7	10·7	1·3
4·9	10·8	13·5	15·1	35·0	27·0	16·0	1·9

MERIDIAN

PROFESSOR KERR'S TABLE, Revised 1866.

(Corresponding to Mr. Tarn's Tables 1. & 3.)


ZENITH LINE
CENTRE LINE OR MERIDIAN
HORIZON LINE
EYE
80°
70°
60°
50°
40°
30°
20°
10°
¼ ½ ¾ ½ ½ ½ ½ ¾ ½ ¼
¾ 1¾ 2½ 3 3 2½ 1¾ ¾
½ ½ ¾ ¾ 1 1 1 1 1 ¾ ¾ ½ ½
¼ ½ 1 1¼ 1½ 1¾ 2 2 2 2 1¾ 1½ 1¼ 1 ½ ¼
2 5¾ 8½ 10¼ 10¼ 8½ 5¾ 2
¼ 1 1½ 2 2½ 2¾ 3 3¼ 3¼ 3 2¾ 2½ 2 1½ 1 ¼
½ 1¼ 2 2¾ 3¼ 3¾ 4¼ 4½ 4½ 1¼ 3¾ 3¼ 2¾ 2 1¼ ½
3¾ 10¾ 15½ 19¼ 19¼ 15½ 10¾ 3¾
½ 1½ 2½ 3½ 4 4½ 5 5½ 5½ 5 4½ 4 3½ 2½ 1½ ½
¾ 1¾ 2¾ 4 4¾ 5½ 6 6¼ 6¼ 6 5½ 4¾ 4 2¾ 1¾ ¾
5 14 21 25 25 21 14 5
¾ 1¾ 3 4¼ 5 5¾ 6¼ 6½ 6½ 6¼ 5¾ 5 4¼ 3 1¾ ¾

* *Total values for the squares of 20 degrees.*

Royal Institute of British Architects.

At a Special General Meeting, of Members only, held on May 9th, 1870, Mr. T. H. WYATT, President, in the Chair,

The PRESIDENT said that, before proceeding to business he wished to say a few words. At the last meeting he was very unexpectedly called upon to occupy the chair of the Institute as their new President, and he was unable at the time to thank the members as he could have wished. If he had studied the dictates of his own feelings he would have declined the honour, no one knowing better than himself his own shortcomings; but as he felt that all were bound, in the interests of the profession and of the Institute, not to shrink from labour or responsibility, he trusted they would accept "the will for the deed." He felt that the same generous confidence which induced them to elect him would further induce them to aid him in his efforts to maintain the high honour and standing of the profession. No effort would be wanting on his part to promote the welfare of the Institute, and trusting to the kind co-operation of the members, he relied upon their kind consideration and support.

Professor DONALDSON said, that before proceeding to business, he would announce that the Royal Society for Promoting the Fine Arts at Antwerp intended to hold an International Exhibition for 1870, which would be opened on August 14th.

CASE OF MR. E. M. BARRY, R.A., AND THE OFFICE OF WORKS.

Mr. C. L. EASTLAKE, Assistant Secretary, having read the notice convening the meeting, viz:—

"To consider whether any and what steps should be taken by the Institute in reference to the subject of a recent correspondence (printed by order of the House of Commons 4th April, 1870), between Mr. E. M. Barry, R.A., and the first Commissioner of Works, respecting Mr. Barry's duties as Architect of the New Palace of Westminster, and in reference to certain communications on the same subject received by the Council from Architectural Societies in Scotland, Ireland, and the Provinces."

The PRESIDENT said, that this was a most important and interesting subject, and one which the Council had had before them a long time, and they now felt that the time had arrived when they would be glad to be fortified with the expression of opinion on the subject by individual members of the Institute, as well as the opinion of the Institute as a body. It was a very difficult and vexed question. They had received a quantity of letters bearing upon the subject, which would be read. Although the Council had some doubts of being able to arrive at any practical conclusion to-night, it would strengthen their hands very much to receive the opinion of individual members. The Hon. Secretary would now read several resolutions and letters which had been received on the subject.

Mr. SEDDON then read the following resolution (passed by the Council on March 14th, 1870):—

"That it having been referred to this Council to advise a member, whether he is bound to comply with a requisition, 'to give up all the contract plans and drawings of a building (to which he

had acted as architect), and all other papers necessary for affording a complete knowledge of the building and of the works carried on in connection therewith,' the Council express their most decided opinion that the rule and custom of the profession is, that all the drawings and papers of an architect prepared for the purpose of erecting a building are, and remain, the sole property of the architect."

Mr. J. P. SEDDON stated that the Council had put themselves in communication with some of the principal Architectural Societies in Scotland, Ireland, and the provinces, with a view of ascertaining the local custom and practice in regard to the ownership of architects' drawings, and that the following opinions had been received in reply :—

THE GLASGOW ARCHITECTURAL SOCIETY.

At a meeting of the Glasgow Architectural Society, held on the 25th April, 1870, the following resolution was passed :—

"That a letter be addressed to the Royal Institute of British Architects, stating that it has been the invariable practice in this district to regard drawings as the property of the Architect; and that this principle is always adhered to."

THE ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.

(*Extract from a letter dated 27th April*, 1870.)

"The statement of the Royal Institute of British Architects on this point" (the question at issue), "correctly and properly expresses the hitherto existing and well-known practice of the profession in this country; and our individual practice has been, where occasion arose, to assert our right to the ownership of plans and drawings."

THE LIVERPOOL ARCHITECTURAL SOCIETY.

At a meeting of the Architectural and Archæological Society, held 20th April, 1870, the following resolution was passed :—

"That this Society much regrets to learn that the First Commissioner of Her Majesty's Works should have been induced to prefer any claim to the ownership of the drawings and other documents prepared for the works in the Palace of Westminster, thus departing very widely from the practice of his predecessors in office for a period of thirty years; and this Society, being strongly of opinion that the plans, the specification, and other documents employed by the Architect are and continue to be his sole property, hopes that the Architect, E. M. Barry, Esq., will steadfastly resist the claim of the First Commissioner of Her Majesty's Works, as otherwise the rights of the profession to retain their property in such documents will be seriously imperilled."

THE MANCHESTER SOCIETY OF ARCHITECTS.

At a meeting of the Council of the Manchester Society of Architects, held 9th April, 1870, the following resolution was passed :—

"That the Manchester Society of Architects, being satisfied of the correctness of the views as to the ownership of Architects' drawings set forth in the Rules as to professional practice drawn up by the Royal Institute of British Architects, desires to assure Mr. Barry that he will have their cordial support in resisting the demand of the First Commissioner of Her Majesty's Works to deliver up to him the drawings prepared by his late father and himself, in their capacity of Architects to the Houses of Parliament."

THE BIRMINGHAM SOCIETY OF ARCHITECTS.

At a meeting of the Birmingham Society of Architects, held 28th April, 1870, the following resolution was passed:—

"The Birmingham Society of Architects being of opinion that by the rules and practice of the Profession the drawings of an Architect are his own property, desire to assure Mr. Barry that he will have their support in resisting the demand of the First Commissioner of Her Majesty's Works to deliver up the drawings prepared for the Houses of Parliament."

Mr. SEDDON then read the following letters, from individual members of the profession, on the same subject:—

From SYDNEY SMIRKE, R.A., Fellow.

Grosvenor Street, May 9th, 1870.

Dear Sir,—As I understand that the subject of the ownership of the working drawings will be mooted to night at the Institute, may I be permitted, as a very old member, to address to you a few lines on the subject, without personal attendance?

Besides being an old member, and besides being an architect, who has practised in London almost as long as any living professional man, I have the still further advantage of knowing familiarly the practice of my late brother, Sir Robert, who was so much older than myself that his practice carries us back to the very commencement of the present century.

I can confidently say, then, that although the working drawings are occasionally given to the client out of courtesy, and in compliance with some particular and special wish, there is no *right* whatever on the part of the client to claim them, nor did I *ever* happen to hear of such a claim having been set up until now.

Very faithfully yours,

SYDNEY SMIRKE.

From EDWIN NASH, *Fellow.*

5, Adelaide Place, London Bridge, E.C., 9th May, 1870.

Dear Seddon,—I am very sorry that I am unable to be at the Institute this evening.

I most fully support the custom of proprietorship in the architect of such drawings as have been made by him for the *execution of a building.*

In a long practice I have never given up *such* drawings without at the time stating that they are my property, and have only given them out of courtesy in the few instances in which they have been asked for, and when I have considered that no occasion for keeping them remained.

I am, dear Sir, faithfully yours,

EDWIN NASH.

From F. P. COCKERELL, *Fellow.*

18, Manchester Square, May 5th, 1870.

Dear Mr. President,—I regret extremely than an engagement in the country will prevent my being present at the Special Meeting upon the subject of Mr. Barry's controversy with the Office of Works. I cannot however withhold my protest against the claims of the Office of Works, and I desire to express my most earnest hope that the Institute will not allow this dangerous precedent to be established without making a strenuous effort in its corporate capacity to support Mr. Barry. I hope

that every member of the Institute will feel it a duty to subscribe to any fund that may be required for this purpose, and to which I shall gladly contribute £5. or £10., or indeed any sum that the Institute may ask from its Fellows.

It will no doubt be interesting to the meeting to know what were my father's views upon this subject. He most expressly and invariably claimed all drawings as his own property. I have to-day learnt of several instances in which he carried this principle into practice.

1. Where a private client claimed the drawings, but upon my father's objecting to give them up, the justice of the objection was admitted, and the drawings paid for.
2. Upon his retirement from the Bank of England the drawings were not claimed, Sir John Soane having established a precedent by carrying away every scrap of paper, but my father expressly and formally handed over his own papers to the Governor as a gift.
3. In the case of a dispute between the Corporation of Liverpool and a tradesman employed by my father (in which there was also some want of confidence towards the latter), the drawings referring to the matter were claimed. My father denied the claim, but eventually surrendered the small-scale drawings which had been submitted to the Corporation, on the ground that the dispute with the tradesman would be prejudiced by their absence. He however refused to give up his working drawings.
4. A provincial architect came to ask his advice some twenty years ago. He distinctly advised him to resist the claim, and instanced his own unvarying practice. I must apologize for the length of this letter. I am, yours truly,

FRED. P. COCKERELL.

From T. CHATFIELD CLARKE, *Fellow.*

63, Bishopsgate Street Within, London, E.C.,
May 9th, 1870.

Dear Sir,—I am very sorry I cannot be present at the Institute to-night, as the question is one of deep interest and importance to architects in many senses.

In a case where I was concerned, my solicitor held that I was entitled to retain the plans, but that I was bound to deliver up the contract which had the specification attached, and as the contractor had an action then pending against my client (I having recovered my fees by a suit), it was in the face of a demand from the contractor that I should retain the contract for his benefit, as however he refused to indemnify me from a threatened suit from my client's solicitor for this detention, the contractor's solicitor advised that an attested copy would suit their purpose, and I gave up the contract.

Faithfully yours,

THOS. CHATFIELD CLARKE.

From G. FOWLER JONES, *Fellow.*

Botham, York, 7th May, 1870.

Dear Sir,—I much regret being prevented going to town on Monday that I might be present at the Special Meeting of the Institute and hear the discussion on the subject raised between Mr. Barry and the Government as to the ownership of professional drawings. Although in the course of my practice for the last twenty-nine years I have never had occasion to maintain my right with legal proceedings, yet in two instances it has been formally recognised, which, as in some measure bearing upon the question, I think they may be of some use to mention, and you can make whatever use you think proper of this communication at the meeting.

One case is that of a lunatic asylum I erected about twelve years ago—for which buildings it is required by the *Act of Parliament* that the original design, contract drawings and specification should be kept in the possession of and retained by the Clerk of the Committee of Visitors. I represented the injustice of this, and the unusual nature of the restriction to make the proper and legitimate use of the drawings for carrying out the works, and the consequent expense entailed upon me in having to provide an additional set of tracings, &c. The Committee took this into consideration, but could not do anything as to the drawings, but unanimously allowed my charge for the extra tracings.

The other instance was that of a private gentleman who had employed me off and on for some years in making drawings for extensive alterations and additions to his mansion in Scotland, which from various causes was delayed until about four years ago, when everything was ready for a start; the work was indefinitely put off on account of his health and inability to attend to any business. In arranging for a settlement of my fees his legal advisers required me to give up the drawings, &c. which I had prepared; this I refused, merely producing them to prove my claim, and although I compromised it rather than proceed against an old friend, I had my drawings returned. These cases are the only ones of any moment that I can name in my own practice as at all bearing on the subject, and as other members will, I trust, make known their individual experience, I hope the accumulated evidence will assist the endeavours of the Royal Institute of British Architects to do good service to the profession generally by energetically supporting Mr. Barry in his right to retain not only his father's drawings but his own

In haste I remain, dear Sir, yours faithfully,

GEO. FOWLER JONES.

From HORATIO K. BROMHEAD, *Architect.*

Glasgow Architectural Society, 159, West George Street,
April 22nd, 1870.

Dear Sirs,—With reference to the enclosed letter, I may say, personally, I once had a case of a proprietor saying that he found he could not carry out the building because of being unable to arrange buying up an existing lease of the ground, and on that plea asking a reduced charge, which I agreed to, and fortunately mentioned on the receipt.

I found out that the drawings were at the quantity surveyors; this led me to call there next morning, and find that estimates were nearly ready to issue. Of course I took away my drawings. The affair ended in my lawyer showing the enclosed Royal Institute of British Architects' scale of charges, as fortunately approved by the Glasgow Society, to the lawyer on the other side, and making him believe he had no legal ground for a case.

This case not having been taken into court, does not give legal precedent; but it shows what may often happen if the law is made to be against architects, and it shows the importance of the Royal Institution of British Architects having defined the proprietorship of drawings.

* * * * * * * * * *

I am, dear Sirs, yours, faithfully,

HORATIO K. BROMHEAD.

From THOMAS P. BRADLEY.

11, Dale Street, Liverpool, May 6th, 1870.

Liverpool Architectural Society and Mr. Barry's case.

Dear Sir,—I have a note from our Hon. Sec., asking me to let you know the result of our circular, and what was said in reference to Mr. Barry's case at our Council meeting.

We have received twelve replies, and hope for more. The general tenor of the replies may be taken as follows:— First, "That a client has no right to the drawings prepared by an architect for his works"; and Second, "That it is not the custom to give up such drawings, and whenever it is done it has been through courtesy and a personal feeling of regard for the client."

There was not time to discuss the question at the meeting, and a special one is to be called for that purpose.

I am, Dear Sir, yours truly,

THOS. P. BRADLEY.

From THE MANCHESTER SOCIETY OF ARCHITECTS.

Manchester Society of Architects,
Royal Institution, Mosley Street, Manchester, April 25th, 1870.

Dear Sirs,—I am now in a position to reply to your circular of the 20th, having obtained written replies from the members of this society, which enable me to state—

1. In *no* instance have the drawings of a building in progress, or of a complete building, been given up to the client, though they have been asked for.
2. Copies or tracings of some of the drawings, such as plan of principal floor, plan of drains or gas pipes, have been and are frequently given to clients on the completion of a building, or in some instances the builder's copy of such plan or other drawings as a matter of courtesy.
3. In cases where by disagreement with the client, or when the latter is prevented by any circumstances from proceeding with the building when the drawings have been prepared, they appeared to have been invariably given up on payment of the architect's account.
4. No case has occurred in which the members of this Society have had to defend their right to the ownership of drawings by legal means.
5. The request for any copies of drawings, except that of the drains, is exceedingly rare.

I have looked through the back numbers of the "Builder" to 1848, but only find two cases in which the ownership of drawings has been contested—one January 14th and February 18th, 1860, in which the County Surveyor of Norfolk successfully maintained his right to retain original drawings—and one January 15th, 1861, Collier *versus* Reid in which the architect lost his case through bad management on the part of his lawyer. From the replies I have received from our members, I find that in making out their accounts they generally word them, "For time occupied in designing and superintending, &c., &c.," and *not* "To preparing drawings, &c."

No doubt you will be prepared with the best arguments for the retention of drawings, still even at the risk of repeating such, I may observe that the case of a lawyer giving up draft deeds is not analagous, he is paid for the production of the papers, *they* are the end, and he does not give up his stock form of a will or a lease, &c.

A painter is commissioned to produce a painting, and does not give up his sketches and studies.

An architect is employed to effect an end, the production of a building, and the means by which he communicates his instructions to the artificers are *his*; it would not be difficult to suppose a case, where by constant attendance at the building, any other drawings than the sketch, plans and elevations might be almost dispensed with.

The great difficulty in the way is that in case No. 3, before mentioned: it is usual to give up the drawings on payment of two and a half per cent. commission—but this is done—because otherwise the client would neither have building nor anything else in return for the money paid to the architect.

I may add that we have already communicated to Mr. Barry that we shall be glad to contribute to any general subscription in aid of the legal expenses he may be put to.

I am, yours faithfully,

J. MURGATROYD,

Hon. Sec.

The CHAIRMAN then said, that wishing to know a little of the custom of the Engineers, he had written to Mr. James Forrest, and had received a reply, of which the following is an extract:—

"I annex an extract from a form of agreement which Mr. W. H. Barlow has invariably made with his Directors on this subject. I cannot learn that there has been any decisive settled rule of practice. Mr. Gregory seems to hold that the client has a right to all that his money was paid for, but that the engineer should be permitted to have copies made at the expense of the client.

I am, your faithfully,

JAMES FORREST."

The extract referred to:—

"Also, that on the completion of the (works, &c.) he furnish the directors of the at his own cost and charges with a correct plan and section of the line, branches, &c.; and correct copies of plans or tracings of the *general* drawings* of all the station buildings, bridges, &c., &c., and that he be paid, &c."

Professor DONALDSON said, that this was a subject of the greatest importance to the profession. They would observe that it divided itself into two distinct questions; the one was as to the dismissal of Mr. Barry from the office of Architect to the Houses of Parliament, and the other as to the right which the Chief Commissioner had of requiring that Mr. Barry should deposit in the office of the Commissioner of Works all the drawings and plans connected with the building. There were, therefore, two questions, and he (the Professor) apprehended that the latter was the only one to which the answers they had received had been directed. But the other one also was very important, and as it pressed in point of time he should beg leave to draw attention to an extract from a letter which he had received from Mr. Barry relating to it:—

24, Oxford Square, W., 8th May, 1870.

My dear Mr. Donaldson,— . . . . . As regards the drawing question, I am in the hands of the profession. If I consider myself alone, I must be guided by my own advisers; if, however, the Institute wish the matter decided as a public question, I feel I ought not to refuse to be their instrument in getting the case settled. I feel too keenly the kind way in which I have been supported by the Institute and the other Societies to hesitate as to this. I have fully explained all this to Mr. Godwin, as I had already done to you. Please return the enclosed letter.

Yours, very sincerely,

EDWARD M. BARRY.

He (the Professor) did not feel that he was betraying any confidence in reading this or the following letters, because he considered that the present was a friendly meeting of the profession to consider the matter in all its points, and it was well that they should be in possession of all the facts in order to arrive at a sound and reliable conclusion. He had in his hand a letter addressed by Mr. Edward Barry to Mr. Gladstone on the subject, which he would read:—

* As distinct from *Working* drawings, which remain with the Engineer.

(Copy.)

PRIVATE. 24, Oxford Square, 22nd April, 1870.

Dear Sir,—After your kindness to me I am very reluctant to trouble you again, but as Mr. Ayrton is treating me (as I think) very unjustly, and refuses all redress, I am forced to appeal to the highest authority.

The Houses of Parliament have always been in the charge of an officer of Mr. Ayrton's department, except for architectural works. This arrangement I have never sought to alter. Architectural works have always been entrusted to me, as architect to the building. This Mr. Ayrton has put an end to; he has dismissed me since the 31st March, without reason assigned, at a time when several of my works are half completed. To my questions respecting these he refuses any answers, and I am at a loss what orders to give to the contractors, and fear public inconvenience may ensue. Notwithstanding Mr. Lowe's kind assurances to me that he did not intend the Office of Works, &c., to be charged with architectural duties, or to take them out of my hands, Mr. Ayrton is now submitting to the Committee on New Refreshment Rooms a plan which comes under this designation. It takes a room from the House of Lords without their consent, and threatens the building with injury both architecturally and otherwise. The slight to me in this matter is the more marked, because I prepared a plan for the same thing last year, which was approved in principle by Committees of *both Houses*, and printed and laid before the House of Commons by Mr. Layard. Mr. Ayrton has peremptorily required me to give up to him all my drawings; and to this request, although most unusual, and I think unfair, I have acceded for the sake of peace.

He further demands of me all my father's drawings. These were made before my appointment, and were my only legacy from my father. You will easily understand why I prize them, and should be pained to part with them. I have offered Mr. Ayrton copies of any he requires; and much as I should grieve to lose them, I would even refer the whole matter to the friendly arbitration of some impartial person, if I could thereby avoid public contention, which is very painful to me. Mr. Ayrton's only answer to my offer is a threat of legal proceedings.

I have now been a public servant at the Houses of Parliament for ten years, and can refer confidently to all my official superiors (Mr. Cowper Temple, Lord J. Manners, and Mr. Layard). During this time I have competed for the great national works of the Law Courts and the National Gallery. The only result to me hitherto of having been successful in both competitions has been serious harm and loss. I need not say how greatly this will be aggravated if my only Government employment be now taken from me without a cause, and my long connection with the Houses of Parliament (since boyhood) be terminated in public and unmerited disgrace.

I have the fullest confidence in yourself and Mr. Lowe, and shall be grateful if you will enquire into my case and deal with it according to your convictions of its justice. I may add that as I have never had a salary, no saving to the public can result from my removal, nor have I ever looked on my connection with my father's great work as a question of emolument. Apologising for venturing to trouble you with this appeal,

I remain, dear Sir, yours, very respectfully,

Right Hon. W. E. Gladstone, M.P., &c. &c. EDWARD M. BARRY.

In reply to this Mr. Gladstone wrote:—

(Copy.)

11, Carlton House Terrace, S.W., May 4th, 1870.

My dear Sir,—I have enquired into the subjects of your letter of the 22nd April, and have conferred upon it both with Mr. Ayrton and with the Chancellor of the Exchequer.

The Treasury is doubtless invested with a controlling power over the Office of Works, but this has especial reference to finance, and it evidently contemplates the restraint, not the enlargement, of his plan and proceedings.

Mr. Ayrton has concluded that it is not necessary that an architect should be specially attached to the Houses of Parliament. This is a judgment which I do not feel myself to be entitled to question, and while I regret any inconvenience to yourself which may be involved, no discredit can attach to the loss of an employment, for which, in his judgment of the responsibility to Parliament, there has ceased to be any adequate occasion.

Mr. Ayrton assures me, with regard to the drawings, that what is required is not the delivery of the drawings of Sir Charles Barry but of the contract working plans and the like executed by subordinate persons. Upon this basis I should hope that no difficulty could arise.

In justice to Mr. Ayrton, I perhaps ought to add that Mr. Chancellor of the Exchequer, who has looked into the matter, concurs in Mr. Ayrton's judgment as to dispensing with the service of a separate and special architect for the Houses of Parliament.

I remain, my dear Sir, faithfully yours,

E. M. Barry, Esq. W. E. GLADSTONE.

To this letter Mr. E. M. Barry replied as follows:—

(Copy.) 24, Oxford Square, 9th May, 1870.

My dear Sir,—Although I have received your letter of the 4th instant with great regret, I hasten to thank you very sincerely for the attention you have so kindly given to my case. I am glad to believe that as I receive no salary, no objections of a financial nature can be urged against my continuance in my post. It is also a source of great satisfaction to me to learn that in your opinion no discredit can attach to me from my abrupt dismissal in the midst of my work, and I should be glad indeed to think it possible that the public would adopt a similar conclusion.

After your letter I feel it would not be respectful if I were to seek to press upon you again my unaltered views of the treatment I have received from Mr. Ayrton, and I therefore content myself with again expressing my grateful sense of your personal kindness in the matter.

It is right, however, to say that the demand on me for drawings is *not* confined within the limits that have been stated to you.

Yours, very respectfully,

Right Hon. W. E. Gladstone, M.P., &c. &c. EDWARD M. BARRY.

It was proper that he (the Professor) should put the meeting in possession of this, because it was necessary that they should be in possession of all the facts which they could possibly get together. He believed that the opinion of Mr. Barry's solicitor (Mr. Freshfield) had been taken upon the point, and also the opinion of the solicitor to the Council. According to these opinions, Mr. Barry was advised that it was not for his own private interest to refuse the requirements put upon him, or to refuse to give up the drawings which he is required to give up. They would perceive, then, that there were two questions involved—the one was the appointment of Mr. Barry as architect to the Houses of Parliament—whether it was proper that a building of that character should be confided to a mere clerk in the Office of Works, or whether a special architect ought not to be employed by the Government? It was another question as to whether the profession were obliged to give up any and what drawings. He believed it was impossible for them to refuse certain drawings, but there was a certain line to be drawn, and what that line was was the question for consideration. It should be borne in mind, that Mr. Barry had, from the first, offered to give Mr. Aryton all he could fairly ask for.

Mr. SEDDON said, that the claim upon Mr. Barry was to give up everything.

A MEMBER said, it was an important point in this question to discover whether there were any contract drawings.

Mr. C. BARRY said, that the specific question was put to his brother's advisers as to whether any distinction, legally speaking, could be drawn between what were called contract drawings or general drawings? Their opinion was that it was doubtful if there was any such distinction, and that the right to any of the drawings might raise the question with regard to the others.

Professor DONALDSON begged leave to suggest that the question put them was "What is the practice of the profession?" They could not answer the legal question.

Mr. ALLOM, jun. said, that he once had to make some drawings for a building, and as the scheme was abandoned entirely, and the drawings cost a deal of time to complete, and feeling that his client who had retained the drawings would not pay the amount owing upon them, he (Mr. Allom) got his solicitor to bring an action for their re-possession. The action went to trial, but at the last moment the drawings were sent back to him.

Sir WILLIAM TITE said the question was really this, How could they best serve Mr. Barry in the discussion in the House of Commons on Friday next? His own opinion was, that the less they interfered the better. He thought the ground Mr. Gladstone had taken could not be disputed. Mr. Gladstone had narrowed the discussion to this question, "Are we obliged to have an attached architect, or can we dismiss him?" He allowed that the argument was very strong, that Mr. Barry's dismissal was unkind, discourteous, and unprecedented, particularly while works were in progress; but it was a matter in which the Institute could not interfere. He had had a long conversation with Mr. Cowper Temple upon the subject, and that was the point he meant to press. Any interference on the part of a public body might be more mischievous with the House of Commons than useful. If he saw his way to recommend the meeting to adopt any particular course he should be very happy indeed to suggest it, but he did not see how it was to be done. Probably, however, there were others who could supply the information. Mr. Barry had been very unkindly and discourteously treated. Was it possible for the Institute to say that it was unusual to have a great building without an attached architect? He did not know that they could very well say that; it might be so, or not, but he could not see that it was for them to interfere in a question of that kind, and that was the real point before the meeting. Mr. Barry had been dismissed. His dismissal while works were incomplete was obviously unjust, and that point did not require discussing. He was at a loss (having thought a great deal about the matter, and having talked it over with Mr. Barry) to say what the Institute could allege to the House upon this question which would not be considered impertinent.

The CHAIRMAN said that Professor Kerr had suggested a petition.

Sir WILLIAM TITE said that a petition went for nothing; it was merely thrown upon the table, and disregarded. Was there any reasonable suggestion that the members, as wise men of business, and members of a public body, could put into Mr. Cowper Temple's hands? To say that it was irregular and unusual to dismiss a man when his work is half finished was superfluous, because it was perfectly obvious, and he believed that that was the great strength of Mr. Cowper Temple's case. He wanted the meeting to address itself to the difficulty he had referred to. The difficulty was this: It was intended, with a view to economy, and arising a little out of the absence of good taste on the part of the Treasury, to do away with the practice of having standing architects for our great public buildings. The Treasury had an idea that one architect was as good as another, and that a builder's clerk was as good as an architect; and as something was saved by this policy, it was the more readily adopted. There was a parallel case afforded by the New Post Office buildings, which were being erected

under a clerk of the Office of Commissioner of Works, at a moderate salary. He did not know what sort of building it would be, but probably it would be found out, when too late, that it was a bad one. The Government generally had very leading men in their service, and—to use a very intelligible phrase—it was "a new dodge" of the Government to act as it had done with reference to Mr. Barry. But it was an economical dodge, and, therefore, acceptable to the House of Commons, which was very great at snubbing art and architects—of which it knew nothing. How could the Institute take any course or pass any resolution which would strengthen the hands of Mr. Cowper Temple in bringing forward the case of Mr. Barry? If they considered it desirable that the extraordinary architecture of the Houses of Parliament, should be placed in the hands of competent persons—that it was so peculiar that it was not to be dealt with by an ordinary artist—something of the kind might be said; and they might express their extreme regret at works half executed being interrupted. That was the kind of thing he wanted the Institute to consider. With regard to the other point of the dispute, it appeared to him that Mr. Barry had thrown the case up. Mr. Barry had told Mr. Gladstone that he had given up his own drawings, and was quite prepared to give up such other drawings as might be wanted. In that view of the case Mr. Gladstone's letter was a little apologetical. He said that Mr. Ayrton did not mean that all Sir Charles Barry's wonderful drawings should be given up, but that a certain amount of them should be handed over to him. He (Sir William) did not see that the Institute could do much more than it had done. They had explained to Mr. Ayrton that it was not the practice of the profession to give up the drawings of a completed building. He (Sir William) always believed that the right to the possession of the drawings was beyond question. As he had told Mr. Barry, if any one wanted him to give up his drawings of the Royal Exchange he would resist the claim. He thought it was a question for a jury whether it was, or was not, the practice of the profession. He thought that if they liked to assume and re-assert, or re-affirm the excellent resolution of the Council they could do so, but he did not think it would go very far with the House of Commons. Their use to Mr. Barry would turn upon what they could say to strengthen the hands of Mr. Cowper Temple on Friday. But with regard to the other question, he thought it would give offence, and he did not think that Mr. Cowper Temple intended to introduce it at all. He would say what Mr. Barry, in his own letter, had very kindly said, that he would give up all that he could as a gentleman, and that Mr. Gladstone did not want more than might reasonably be expected of him. How could they help Mr. Barry in this case, which affects the whole of the profession? In the affirmation that Government buildings of great value ought to be placed in proper hands, and particularly that they should not be interrupted by any notions of economy, or any other considerations, in the middle of the works in progress? He would not recommend them to confine themselves more to the first point than to the last, viz., as to whether drawings should be given up, or not. If he were asked to go into court, and was asked the question as to the custom of the profession, he should say that he never knew such a request to be made, much less to be attempted to be enforced. He knew that Sir Robert Smirke had all his drawings—of the Post Office, for instance—all bound together in covers, and ticketed, docketed, and catalogued. He had seen the same thing with regard to the Custom House, when Sir Robert Smirke directed what was virtually the rebuilding of that edifice. Sir Robert did not suppose that these drawings belonged to his employers, or he would have been a fool for his pains in going to the expense and trouble he did over them. Nobody ever asked him for a drawing. How many others had this question asked? He never knew it to occur yet. They would see the delicate position in which everybody was placed by this dispute, and would best serve the interests of the profession by turning their attention to the public position of Mr. Barry.

Mr. GEORGE GODWIN, F.R.S., could not agree with the latter part of Sir William Tite's address. If the profession allowed this case to go by default they would never again be able to raise the same

issue. If this were to be surrendered no architect hereafter could refuse to give up his drawings. Although the law might perhaps be doubtful, he did not think the case had ever been fairly tried. The case of Mr. Brown (referred to in one of the letters read) never went to a final legal conclusion. Upon certain representations being made, the Town Council yielded, and either paid Mr. Brown for his drawings or gave them up. The custom was so universal that he thought it was quite time that the Institute and professional societies throughout the country should formally establish it. Not many years had passed since judges refused to listen to the statement that five per cent. was the customary commission on new works to be allowed to an architect, but by the constant reiteration of the assertion in court the custom had come to be generally acknowledged, and he fancied that no judge in these days would refuse to consent to an account charged on this plan. He thought that an opportunity now presented itself for establishing on a firm basis the custom of the profession with regard to drawings, which was one absolutely common sense in its nature, and absolutely necessary for an architect—viz. that the drawings do belong to the architect, and that he is not to be called upon to hand these drawings over to his employer—that they belong to him as a right. On the other hand, it was quite out of the question that Mr. Barry should be left to fight out the question by himself. His lawyer would probably say, "I cannot advise you, as an individual, to spend a thousand pounds upon a case which may go against you; but if it were a public body in your place I should say most decidedly 'Try it.'" The case was, a difficult one, and he thought it was the duty of the Institute and of every member of the architectural body throughout the country to form a subscription list, and solicit Mr. Barry to refuse to give up the drawings. He had very little doubt, from the temper that had been manifested throughout the country, that a considerable subscription would be forthcoming, and therefore he hoped the Institute would not advise a surrender. But whatever was done must be done at once. He was quite willing to subscribe five guineas towards the expenses of the trial.

Sir DIGBY WYATT said he had listened with great anxiety to what fell from Sir William Tite. Now Sir William occupied a double capacity, and his feelings and interests as an economical member of the House of Commons might have caused him to cool in his extreme interest in the maintenance of the standing of the profession. He was delighted to hear Professor Donaldson so clearly state the compound nature of the question the meeting had to consider. It was not only a question as to the ownership of drawings,—that was a legal point; but one which he (Sir Digby) regarded as of much more importance, viz., the oppression of an individual architect by an authority which single handed it would be impossible for any architect to fairly cope with. He last night sat down and tried to frame a few resolutions, which he would venture to read, just throwing them out as what he desired to see carried, but at the same time expressing his entire readiness to concur with what might appear to be the dominant feeling of the meeting. With regard to the notion of fighting this question, he thought there could be no question whatever that, if it should be considered that it was a question which ought to be at any time fought, the present was the necessary occasion to do it. As Mr. Godwin had truly said, to allow the question to go by default now would be to allow it to go by default for ever. He also thought that the question ought to be fought by the profession, and not by Mr. Barry. To that end he should be happy to subscribe twenty guineas. These were the resolutions he should like to see carried.

Sir DIGBY then read a series of draught resolutions:—

1st. Condemnatory of the conduct of Mr. Ayrton.

2nd. Sympathising with the position of Mr. Barry.

3rd. Urging action on the part of the Institute both towards the Premier and the legislature, with a view to make manifest the indignation felt by the profession generally at the course adopted by Mr. Ayrton.

4th. Urging the usage of the profession with regard to an architect's retention of an interest in his drawings after the completion of the work for which they had been prepared.

And 5th. Pledging the meeting to support Mr. Barry, by a subscription if necessary, in bringing the above question to a legal issue.

The strong words used might possibly produce a smile, but the matter under discussion he could assure them was no laughing matter at all. It involved the respectability of the profession in the eyes of England. To have—instead of a minister of fine arts, as they had in France—instead of an intelligent person who should be really capable of entering into the questions which affected the profession, and who should be able to judge between fit and unfit men for employment on national works, a man put in a situation which required the exercise of judgment in matters of architecture, who had publicly boasted of his ignorance of and contempt for art, was a matter for the most serious reflection of the members of the profession; it was important to them individually as well as collectively. The profession had been publicly insulted—and that by a government presided over by a minister professing anxiety for the progress of national technical education, and the culture of art and science. On all occasions when Mr. Ayrton had had an opportunity of having a fling at them he had taken it, and in so doing he had exhibited neither intelligence nor prudence. Sir William Tite had, with his usual kindness of heart, suggested in a practical way, that it would be imprudent for them to make any strong opposition to Mr. Ayrton's authority, as it might be productive of injury to Mr. Barry. On the present occasion Sir Digby considered it fitting to sink partisanship, and believed himself to be speaking entirely upon the public dignity of our national art. He spoke as an Englishman as well as an architect. It was disgraceful that what had been done should have been done. It was disgraceful that letters such as Mr. Ayrton's should issue from any minister of the State. Instead of being honest and straight forward, they ignored the points and arguments in Mr. Barry's letters, were as rude as they well could be, and as costive as those in which lawyers' usually hold "the other side at arm's length." He would, by permission of the meeting, read them a short sample (Sir Digby then read No. 3 of the printed correspondence.)

Mr. G. Russell *to* Mr. E. M. Barry.

Sir,—Adverting to my letter to you of the 22nd of January last, I am directed by the First Commissioner of Her Majesty's Works, &c., to remind you that no steps have yet been taken by you to place the plans and drawings of the Palace at Westminster in the office of the Clerk of the Works.

The First Commissioner desires me to add that he has not thought it necessary to enter into any discussion of the topics raised in your letter of the 10th ultimo, based upon assumptions which he does not recognize, and he requests that you will be good enough to comply with the directions contained in my letter to you of the 22nd of January last, above mentioned, before the close of the financial year, and that you will also be good enough to forward all the contracts or correspondence constituting them which at present remain unexecuted.

I am, &c.,

E. M. Barry, Esq. GEORGE RUSSELL, Secretary.

Now that was in reply to a long? patient, courteous, and argumentative letter by Mr. Barry. Could anything be more insulting? No Government office and no Government position could justify such a letter. He hoped that Mr. Cowper Temple would make it known to the House on Friday that the profession was of opinion that Mr. Barry had been most unhandsomely treated. Sir William Tite had deprecated such a course as he (Sir Digby) would like to see pursued, but he (Sir Digby) believed that the House, on learning the facts of the case, would strongly sympathise with Mr. Barry. It was to be regretted that while the House had under its consideration the extension of popular education, a member of the Government had brought that good cause into contempt by insulting those who possessed the highest art training.

Mr. FERREY said, that for thirty-five years he had been in practice, and had never been called on to give up his drawings. He had been employed by public bodies and private individuals, and never in any instance had he been required to give up documents which he considered as his own. Sir Digby Wyatt had rather startled him by the stringent terms in which he referred to Mr. Ayrton's conduct in this matter, but he (Mr. Ferrey) was inclined to take a middle course.

Professor DONALDSON said there were two distinct questions—one was the supporting of Mr. Barry in the immediate emergency in the House of Commons on Friday—the other could be dealt with by the Professional Practice Committee.

Mr. C. F. HAYWARD said, that twice in his short experience had he been called upon for drawings of buildings—once for those of a building that had been executed, and once for those of a building intended to be executed, and which went so far as tenders being received, but was not carried out. In both cases the question was thoroughly argued out. He was required most peremptorily to give up the drawings, and he as peremptorily refused, and his clients gave way. He hoped that something definite in the matter would be done, for now was really the time. They must not allow themselves to drift any further away from this question. The Institute ought to have made a bold determined stand once before on a point to which he called the attention of the Institute. It was a case in which the profession was sadly maltreated, and he thought that if the Institute and the profession showed a bold front on all such occasions it was the best policy they could possibly pursue.

Mr. AUSTIN said, he thought they were rather going away from the kind advice given by Sir William Tite. They had one object paramount that evening, viz., to give any suggestions by which they could strengthen the hands of Mr. Cowper-Temple. He was not speaking quite from his own experience, but he thought it might be generally stated that if they looked around within the last forty years on the number of cathedrals and other public buildings which had fallen into disrepair, they would see some little of the causes and reasons of that state of decay, and it would invariably be found that such buildings have been in the charge of a sort of clerk of the works, who had patched them up to the best of his ability, but often very badly. They might point to such instances by way of illustration. He considered that they might, as a body, ask that the Government should consider whether a building on which the nation has spent so many millions of money should be neglected to save the commission of any architect, and merely to suit anybody who happened to be a Minister.

Professor KERR said, that if any stranger to the profession had listened to the debate, he would come to the conclusion that they had at last been forced into opposition by a long series of outrages, and he would have formed so far a proper conclusion. The question was now before the great jury of the country, and they must consider in what degree the public would support them in their demands. He thought they would all agree as men of the world that the public would not support them on the present occasion in respect to the drawings, because Mr. Barry had already conceded that matter. Mr. Barry was ably advised; and they could not expect him to yield his own interest for the sake of a public principle, which might, after all, have proved to be an error. But as regards the other question, he thought they were on entirely different ground, as the opinion of the Institute was in full accord with the opinion of the public that the Houses of Parliament and all other public buildings should not be placed in charge of incompetent hands. If they could express that opinion in a businesslike and respectful way, they would do a deal of good for Mr. Barry and no harm.

Mr. C. BARRY said, that the lawyer's opinion was given very much as Mr. Godwin put it, viz., that it was not desirable that his brother, as an individual, should fight such a question. As to the distinction between the contract drawings and the working drawings, there was none in the eye of the law. At the same time, Mr. Freshfield had told his (Mr. Barry's) brother that the custom of the

profession would be the one of the chief points on which he could rely. As to the concession of drawings by his brother, he had only promised to give such as might be required by Mr. Ayrton as a *gift*, but with respect to his father's drawings, four thousand in number, it would be impossible to supply them, although he was not unwilling, for the good of the public service (if Mr. Ayrton chose), to have them traced at the Government expense. These concessions were very different to what had been represented. He had had no case in his own practice in which he had been asked for drawings, and had they been claimed he should have resisted. A brother architect (Mr. Bull), architect to Day and Martin, had been required by his clients to give up his drawings; lawyers' letters passed, the result being, however, that Mr. Bull was successful, insomuch that the lawyer of his clients advised them not to press the claim to be paid for the drawings, and Mr. Bull was paid for supplying copies of them.*

Mr. W. FOGERTY said, that as one who had engaged in more than one legal contest in support of the rights of the profession, he wished to give the benefit of his experience; that was to the effect that the danger to be apprehended was not so much from without as from within. As to the legal rights of architects, he thought it a pity that the Institute had not a standing counsel. The Irish Institute had such an officer, a gentleman who, along with the present Attorney-General for Ireland, had acted for him, and both had given careful attention to the legal rights of the profession. Of course the main question always was, "What is the custom?" Not long ago, one of the members of the Irish Institute, Mr. J. E. Rogers, was called upon, just as Mr. Barry was, to surrender his drawings, and under the advice and with the support of the Institute had declined to do so, the result being that the clients (a Board of Guardians) found it best to give in. Some time afterwards it was his (Mr. Fogerty's) misfortune to meet with certain clients who fancied that the usage as set forth in the Institute paper was an imposition, and should be resisted. He had deemed it his duty to bring the matter to trial, which was done with a powerful array of counsel on both sides. His position was, that the Institute document truly and honestly set forth the usage, and this was abundantly proved by Sir Charles Lanyon and several other architects of eminence. The Chief Baron, before whom the case was tried, took particular interest in the case, which he said was of great importance as defining the relations between architects and the public. The particular question now under discussion was raised amongst others, and Sir Charles Lanyon gave very satisfactory evidence on it, stating that the right to retain the drawings was the architect's only protection against piracy. The case was going on very well with every prospect of a successful issue, when a Fellow of the Institute appeared as evidence on the other side. This gentleman, to his utter astonishment, swore directly contrary to the Institute document, as not truly stating the usage, and gave other evidence calculated to bring it into disrepute. ("*Name!*") He had furnished the name to the Council—Mr. Deane. The Judge had of course to let the matter go to the Jury, who, finding that architects were not agreed, were unable to agree either, and the matter has remained undecided ever since. He (Mr. Fogerty) was fully determined to bring it into court again, as he believed the usages in question existed long before they were published by the Institute. He would, however, respectfully suggest that if Mr. Barry was to be supported in a similar case by the Institute, it should be carefully considered what kind of evidence was likely to be brought into court. He thought it lamentable that men who in joining the Institute had made a declaration to abide by its rules and promote its objects should be found ready to assist in subverting both, to the grievous injury of their brother architects. He had brought the whole matter fully before the Council, but he was sorry to say that body seemed to regard it as a matter of no consequence.

---

* See letter from Mr. E. Bull, on this subject, inserted at the end of this report.

Mr. SEDDON said that in Mr. Deane's absence it was only fair to state that when the case was brought before the Council there was a strong conflict of evidence as to the facts.

A MEMBER said that the executors of the late Mr. Charles Reed, the Surveyor to the County Courts to the late Government, had a similar demand made upon them by the Government to that which had been made upon Mr. Barry. The executors resisted the claim, but expressed a willingness to give them up to the nation at a fair valuation. The whole of the drawings were immediately put into the hands of Mr. Noble, who named a sum to the executors as what he considered a fair compensation for the drawings, and the Government admitted the claim, though they did not pay the precise amount named by Mr. Noble.

Sir W. TITE thought that a deputation should wait upon Mr. Gladstone. If an interview was refused it would answer his (Sir William's) purpose just as well, because he could state that if the deputation had been heard they would have explained matters which he would bring forward. Let them try to see the Minister, and if they could not succeed (Sir William), if supplied with the facts of the case would take care to bring them under the notice of the House.

Mr. HORACE JONES could not help thinking that the remarks of Professor Donaldson hit the matter in the right spot. He divided it into two questions, and such division was necessary, but if Mr. Penrose's resolution was taken both questions were mixed up. The one was immediate, the other less pressing. Let a special committee be formed to consider the immediately urgent question as to the re-instatement of Mr. Barry, and let another special committee be formed to resist the demands made in respect to the drawings, and, if found necessary, to carry it into court; he would put his name down on the subscription list.

After a long conversational discussion, in which Sir Digby Wyatt, Professor Donaldson, Mr. E. I'Anson, Mr. Penrose, Mr. Horace Jones, Mr. Charles Barry, and Mr. J. P. Seddon joined,

Mr. PENROSE said, he should be willing to accept Sir Digby Wyatt's amended resolutions if he would move them clause by clause.

Mr. JENNINGS said, he had been engaged for many years on large works, and before they were all completed, alterations took place in the board of direction and the general staff, terms were proposed to him which he did not choose to accept, and he consequently declined having anything further to do with the works or being responsible for them. His employers claimed the drawings; he took professional advice, and the opinion he received was that anything which constituted part of the contract—any drawing which was signed by the contractor—necessarily became part of the contract, and that that contract was the property of the employer; but that those drawings which were not signed, and which were merely made for convenience as a means of describing how the work was to be done, the architect was not bound to give up. The result was that he gave up the signed contract drawings, but he absolutely refused to give up any others, although he said that he should feel bound to give his clients any information as to the building at any time it was required, on condition that he was paid for any loss of time he was put to. Although in law those things which form part of the contract are the property of the employer, there can be no doubt that an architect is entitled to charge for *copies* put on two parts of a contract.

Mr. O. HANSARD said, that with regard to the Corporation of King's College Hospital, that edifice had to be built in separate portions, extending over several years. On the completion of one portion of the building the Corporation demanded that the whole of the drawings and the specification should be placed in their hands. Mr. T. Bellamy, the architect, following the usage of the profession, objected strongly to this, and after much dispute as to the right of possession, a compromise was effected, by which it was agreed, that they should be handed over to the Corporation on the death of the architect.

Mr. HAYWARD said that there were a large number of signed contract drawings of the brothers Adam in Sir John Soane's Museum. This, he thought, showed that in the time of the Adams's the contract drawings, as were all others, were considered the property of the architect.

Mr. E. BASSETT KEELING handed in to Mr. Eastlake the following report from the 'Builder' for July 7, 1866:—

"Architect owner of his Plans.

"In the County Court, on Friday, before Mr. J. K. Blair, Judge, Robert Esdaile, Harford House, Fairfield Crescent, Fairfield, who appeared in person, sued Thomas Mercer, architect, 40, Church Street, for the detenue of certain plans and specifications of property for which the defendant had been architect. The plaintiff stated that some time ago, requiring some alterations of property in London Road, he employed the defendant to prepare plans and specifications. After the work was completed he required the plans, in order that he might be prepared when any question of drainage or repairs arose. He called at the defendant's office several times, and at length was told that the defendant declined to let him have the plans. For the defence it was contended that it was the custom of the architect to retain the plans he made as his own property, unless a special contract to the contrary was made. Sometimes the plans were given up, but merely as a concession. He called Mr. Worley, architect, who confirmed the allegation as to the custom of architects retaining their plans as their own property. The owner of the property might have obtained the plans that the builder worked from. The Judge non-suited the plaintiff, and allowed defendant his costs."

Mr. FERREY said he remembered perfectly well that the late Mr. Wilkins had in his possession all the drawings of King's College, Cambridge, and the National Gallery, and he believed that they were now in the possession of Mr. Wilkins's son.

Mr. AITCHISON said it was a very important thing to know whether architect's drawings really belonged to them after the completion of the building. Now-a-days, large companies and the like, who had dealings with contractors or employed clerks of works, endeavoured very hard to get hold of all the drawings. An instance of this sort of thing was afforded by the Privy Council, who always kept the plans of schools erected under their auspices.

Professor DONALDSON said the Church Commissioners did the same thing.

Sir DIGBY WYATT then proceeded to move his motion, in clauses as follows:—

1st. That it is fitting and indeed necessary for the worthy maintenance of national monuments and buildings, that they should be always under the superintendence of professional men of independent position and high standing, who have been specially educated as architects.

Seconded by Mr. FOGERTY, and carried unanimously.

2nd. That the custom of the profession has uniformly been, that the ownership of drawings and other documents, prepared for the execution of buildings, has rested with the architects employed.

Seconded by Mr. GODWIN, and carried unanimously.

3rd. That a copy of the above resolution be forwarded to all the Members of both Houses of Parliament, and that the widest possible publicity be given to the same.

Seconded by Mr. NEWTON.

Mr. PENROSE wished the meeting to reconsider that point. He thought it would be better to leave to the discretion of the Council the amount of publicity to be given to their doings.

Sir DIGBY WYATT said he could not defer to Mr. Penrose's suggestion, as it was necessary that the matter should be expeditiously arranged; moreover, he thought it would be invidious to make any selection in the matter.

It was ultimately agreed that the widest possible publicity should be given to the proceedings of the Committee, and the third clause, as amended, was agreed to.

Mr. BOULNOIS quoted a Government precedent in the matter set within the past few weeks by Mr. Cole. This made the second Government precedent with which they could back up Mr. Barry's refusal to accede to the demands of the Government.

Mr. C. BARRY said he could give another Government precedent. Mr. Sorby, who held the position of architect and surveyor to the County Courts, on entering on the duties of his office, found himself in charge of a large number of buildings of which he had no plans. He therefore pressed his superiors to obtain for him copies of the drawings which had been made by his predecessors. On applying to the representatives of the architects who had drawn the plans the question of property was raised, and such drawings could not be had without a money payment. The money was paid by the Government, and the drawings obtained.

Mr. FOWLER remarked that where architects had been employed officially at a salary he thought the case was totally different to that when they were only employed on commission. If an architect accepted a position at a salary, he sold—so to speak—all his mind to the office which he undertook, and therefore he sold all his copyright to the works he erected.

Sir DIGBY WYATT having then moved the fourth clause of his resolution, which was seconded by Mr. Boulnois,

A lengthy conversation ensued, in which Mr. Fogerty, Mr. Boulnois, Mr. Hayward, Professor Donaldson, Mr. Horace Jones, Sir Digby Wyatt, Professor Kerr, Mr. Hansard, Mr. Newton, Mr. R. W. Edis, Mr. J. P. Seddon, Mr. Fowler, and the Chairman took part. In the course of this conversation the fourth clause was amended, and finally put, as follows:—

4th. That a Committee be appointed, to consist of the President, Vice-Presidents, the Council, and such other Members of the Royal Institute of British Architects as the Council may deem fit, and that this Committee be authorised and requested on the part of the said Institute to support and to urge upon Her Majesty's Government, either at interviews, by correspondence, or otherwise, the views expressed in the previous resolutions; with the power to convene future Special General Meetings for further consideration of the subject whenever they may see fit.

Seconded by Mr. BOULNOIS.

Mr. HORACE JONES proposed as an amendment:—

"That it be an instruction to the Special Committee to seek from Her Majesty's Ministers and advisers, a means of bringing to a legal test (without the prejudice of personal feeling as regards any architect employed by Government), the question of their demand for the possession of an architect's drawings, &c."

The CHAIRMAN then put the amendment and Sir Digby Wyatt's original motion to the meeting, when the former was carried, as above.

Sir DIGBY WYATT then moved the fifth and sixth clauses of his resolution, as follows:—

5th. That a vote of cordial sympathy with Mr. E. M. BARRY be communicated to that gentleman.

6th. That he be encouraged by the expression of such sympathy to resist to the utmost the unprecedented demand made upon him: and that, in the event of expenses being incurred with reference thereto, in trying at law any questions which may arise between himself and the First Commissioner, this Meeting pledges itself to promote the raising a guarantee fund for the same.

It was further *resolved*:—

"That the President and Hon. Secretaries be empowered to request Sir WM. TITE, M.P., ex-

President, to procure, for a Deputation from the Institute, the favour of an interview with the Premier, on the subject of Mr. E. M. Barry's case."

Carried by acclamation.

A vote of thanks to the Chairman, proposed by Mr. G. GODWIN, brought the meeting to a close at a late hour.

At the Ordinary General Meeting held on Monday, 16th May, 1870, T. H. WYATT, President, in the Chair.

PRELIMINARY PROCEEDINGS.*

CASE OF MR. E. M. BARRY, R.A., AND THE OFFICE OF WORKS.

THE PRESIDENT said that before proceeding with the business of the evening, he wished to inform the members what steps had been taken with reference to the subject of the last special meeting. He would state that a deputation from the Institute had waited on Mr. Gladstone in reference to the case of Mr. E. M. Barry. Sir W. Tite and several members of the Council attended on the occasion, but as he (Mr.Wyatt) was unable to be present, and therefore was not in a position to report precisely what took place, he would beg their attention to an abstract of the proceedings which Mr. Eastlake had prepared, and which would probably be interesting to the meeting.

Mr. EASTLAKE then read as follows:—

DEPUTATION TO THE GOVERNMENT.

"In accordance with a resolution passed at the Special General Meeting, held on Monday, the 9th May, 1870, a deputation from the Institute waited on Mr. Gladstone at Downing Street at 3 p.m., on Friday, the 13th inst. It consisted of the following members: Sir W. Tite, M.P., and A. J. B. Beresford Hope, Esq., M.P., Ex-Presidents; E. I'Anson, Vice-President; Sir Digby Wyatt, Messrs. G. Aitchison, A. W. Blomfield, D. Brandon, F. P. Cockerell, H. Currey, R. W. Edis, G. Godwin, J. H. Hakewill, O. Hansard, C. F. Hayward, R. Kerr, T. H. Lewis, J. Peacock, E. Roberts, R. L. Roumieu, T. Roger Smith, J. P. St. Aubyn, G. Truefitt, F. Warren, W. White, S. Wood, J. P. Seddon, Hon. Sec., C. L. Eastlake, Assistant Sec.

The deputation was received by Mr. Gladstone, with whom were also the Chancellor of the Exchequer (Mr. Lowe), and the First Commissioner of Works (Mr. Ayrton).

Sir W. TITE, having introduced the members, said that it was not his intention to refer to the legal question of the right of ownership to architects' drawings; he might, however, state that the resolutions recently passed by the Institute, and copies of which had been sent to every member of the House of Commons, only confirmed the professional custom and practice which had long existed in this country. Sir William added that he had never been asked by any client to give up his drawings, and if he had been so asked, he would certainly have declined to do so. The main object of the deputation was, however, to call the attention of her Majesty's Government to the abrupt dismissal of Mr. E. M. Barry from his office of Architect to the Houses of Parliament, under circumstances which were made known in the correspondence, recently published by order of the House of Commons, between that gentleman and the Office of Works. The whole affair had been fully discussed at a

---

* A Report of these Proceedings has already appeared in Sessional Paper No. 10, but is reprinted here in connection with the Report of the Special General Meeting on Mr. E. M. Barry's case, to which it forms a sequel, in order to render the whole account complete.

Special Meeting of the Institute, and he was bound to say that the feeling in the profession was exceedingly strong on both points, viz.: the question as to the ownership of the drawings, and also as to the slight cast on Mr. Barry. Having given this short explanation, he would now leave those who had taken a prominent part in that discussion to speak for themselves on the subject.

Sir DIGBY WYATT stated that he represented his brother, the President of the Institute, who was unavoidably prevented from attending. He referred to the strong feeling entertained by the Institute that Mr. E. M. Barry had been dismissed from office in a very unjustifiable manner, and especially alluded to the uncourteous, and he might even say rude nature of the answers which that gentleman had received during his correspondence with the Office of Works on this subject. Sir Digby dwelt on the imperative necessity of consigning public buildings of any architectural importance to the care and professional superintendence of a competent architect, which was the universal custom in foreign countries. With regard to the ownership of architects' drawings, he observed that the deputation based their views on the professional custom recognized not only in London, but in the provinces, on this subject. He trusted that Her Majesty's Government would remember that Mr. Barry had neither refused, nor wished to withhold, any information of a practical kind which was necessary to the Office of Works, and which it was in his power to supply; but, as a matter of principle, sanctioned by undeviating custom, it must be maintained that the drawings and documents prepared for the purpose of erecting a building were the property of the architect who designed it. Sir Digby remarked, that while the policy of the Government might be dictated by worthy motives in promoting national economy, that policy would effect but a short-sighted economy if exercised on occasions like the present. He would, moreover, remind Her Majesty's Government that Mr. Barry, during his term of office, had not been paid by salary, but by commission, for works carried on, and that the extent of such commissions had not exceeded £300. per annum, so that the expense saved for the future was not worth consideration. Sir Digby added that the present unsettled state of the law of copyright was an additional reason why an architect should maintain the right of ownership to his drawings, which in point of fact constituted his sole protection against piracy of design.

Mr. BERESFORD HOPE, M.P., spoke, as Past-President, of the architectural importance of the Houses of Parliament, and of Mr. E. M. Barry's zeal and attention to the professional supervision required from him while he remained in official charge of the building, and during the alterations and additions carried on in connection with them. He referred to the cavalier and abrupt manner in which Mr. Barry had been dismissed from office, and to the injury likely to ensue to the public service in the Department of Works if the course adopted by the Government should be formally confirmed.

Mr. GEORGE GODWIN, F.R.S., said he had been requested, as an old member of the Institute, to add some words to what had been already said. First, as to the ownership of drawings; as a matter of universal custom they belonged to the architects. As the conductor of a professional journal he had corresponded during five-and-twenty years with persons in all parts of the kingdom on this subject, and he could say that in no one case of which he was aware had the claim when made on the part of the employer been maintained. He was not aware that any case had been settled in a court of law; representation of the existence of the custom and the common sense on which it was founded had sufficed to bring about a settlement. The custom prevailed everywhere. He believed copies of resolutions to that effect from societies in England, Ireland, and Scotland, not to speak of America, had been already handed to the Minister. He thought the Courts would hesitate before coming to any decision in opposition to a custom so long and generally held, even should they happen to be of another opinion. It had been asserted in a public journal that the Institute of Architects had wrongly interfered in expressing their opinion that it was necessary for the worthy maintenance of national monuments and

buildings that they should be under the superintendence of specially educated men of high standing. He could not agree in this objection. The Institute as a body were wholly disinterested in so speaking, and he knew no other body from whom the public might more fairly look for an expression of opinion on the subject. Reference had been made to various public buildings, each placed under the superintendence of an architect. He might add to the list by naming nearly all our cathedrals. These important structures had suffered for years by being left to the care of a mason or a clerk of works; but the opinion of deans and chapters had become educated on the point, and now he believed there was not one that was not under the supervision of an architect. The profession were strongly affected by the course that had been pursued towards Mr. Edward Barry and the important questions that were raised by it, and he ventured to urge that it called for reconsideration on the part of the Government.

Mr. JOHN P. SEDDON, Hon. Sec., referring to the question raised as to the ownership of drawings, advanced as a reason for the custom of architects retaining them the fact that an architect, in his position of umpire between his client and the contractor, ought to hold the contract drawings as between those contracting parties. Accidents and claims might arise after the completion of the work, and the contractor might fairly look to the architect for the drawings which were evidence of the contract, particularly as oftentimes the employers were temporary committees disbanded when the work was complete, and by whom the drawings might be lost or mislaid. The detail drawings were only instructions given to the contractor as explanatory of the contract drawings, and it would be as reasonable to call upon the architect to give up his private letter-book as those. Mr. Seddon also pointed out that contract drawings never displayed the course of flues and drains, at any rate as executed, and therefore such drawings as Mr. Ayrton asked for would not be found among them, but were usually made during the progress of the work, and every architect would gladly supply his employer with such or copies of them.

Mr. AYRTON, First Commissioner of Works, replied, that the observations made by the deputation, and indeed the object of the deputation itself, was founded in error, and in a complete misapprehension of the course taken by the Office of Works. The correspondence which had been published between that Office and Mr. E. M. Barry contained only partial information on the subject before them; and Mr. Barry could, if he pleased, supply further details, which would put a very different construction on the matter.* He (Mr. Ayrton) begged to state that, in referring the question which

---

* In reference to this remark, it may be well to call attention to the following letter addressed by Mr. E. M. Barry to the 'Architect' of the 28th May, 1870:—

Mr. Barry and the Government.

Sir,—Your report is the only account I have seen of what passed between the Government and the deputation from the Institute on the 13th instant.

In this report Mr. Ayrton is said to have stated that "the correspondence which had been published between the Office of Works and Mr. Barry contained only partial information, and Mr. Barry could, if he pleased, supply further details, which would put a very different construction on the matter."

I consider it due to those of my professional brethren who have so generously made my cause their own, and to whom I shall ever feel deeply grateful, that I should deny this statement (if it were ever made) in the most direct and explicit manner.

I have nothing to explain or conceal; and if Mr. Ayrton had any complaint against me in the background, it is strange that it was not stated in his correspondence, when he had every opportunity of making, and I of answering it.

It is, however, true, that if he had given in the correspondence some of the statements he made in the House of Commons, *e.g.*, the reference to the Burlington House drawings, it would certainly have been in my power to put a different construction upon those matters.

I am, Sir, your obedient servant,

21, Abingdon Street, Westminster, S.W., EDWARD M. BARRY.
May 25, 1870.

had arisen respecting the right of the Crown to the Law Officers of the Crown, he had taken the only course by which he conceived he could arrive at a proper solution of that question; and he had only adopted that course after the refusal of the executors of Sir C. Barry and after Mr. E. Barry's refusal to recognize the right of the Crown to certain documents which were required by the Office of Works. It was not the whole of the drawings which had been required, but a certain portion which were necessary, and for a specific purpose. He disclaimed any intention to be discourteous to Mr. Barry. The letter to Mr. Barry did not state that he (Mr. Barry) had been dismissed from his office, but that certain official changes were being carried out. Mr. Ayrton added, that it would be impossible for him then to enter into detail, but the whole question would be discussed in the House of Commons that night, when the public would be in a better position to judge of the matter.

After a few words from Mr. Gladstone, who said that he felt obliged to the deputation for stating their views on the subject, which should receive due attention from Her Majesty's Ministers, the deputation withdrew."

The Report having been read,

THE PRESIDENT said the Council had thought it right to postpone any further action on their part until the opinion of the Law Officers of the Crown had been pronounced, and until it was known what further measures would be taken in the matter.

Mr. CHARLES BARRY, Fellow, said he was unwilling, for obvious reasons, to take any prominent part in the discussion of a subject interesting to all members of the profession, but he begged permission to make one or two observations bearing upon it. Mr. Ayrton, in his speech in the House on Friday evening, said that Mr. Gilbert Scott, as well as his (Mr. Barry's) partner and himself, amongst various architects of England, had acquiesced in the course proposed to be adopted in the case of the architect's drawings of the Houses of Parliament. To that statement he wished personally to give a most emphatic denial; he and his partner had addressed a letter to 'The Times,' which he presumed would appear on the following morning, stating that not only did they not acquiesce in the Department of Works retaining all the contract drawings in the case of the new buildings at Burlington House in their custody, but that they strongly protested against such retention; the fact being that the contract drawings in the case referred to were all signed and executed at the Office of the Department of Works, under the eye of the Secretary of the First Commissioner. Those drawings were detained, the architects were unable to get them away from the office, and it was only after a great deal of trouble and pressure that they were allowed to take tracings of those drawings. Therefore, so far from having acquiesced in the retention of the drawings by the Department, his partner and himself protested against it; and he now wished to state his adherence to the professional custom as enunciated in the resolution passed at the recent special meeting of the Institute. He quite concurred in the view taken by the Council, that any further steps in this matter would be undesirable at present, save in one respect, viz., that inasmuch as the opinion of the Law Officers of the Crown, invited by the Government, would necessarily be *ex parte*, the Council, he would suggest, should take such means as might be open to them to place before those gentlemen the unanimous testimony which the Council had received from the principal architectural societies of the country, and such others as no doubt they would receive on the same subject. Otherwise, the opinion of the Law Officers would be *ex parte*.

Professor DONALDSON, Past-President, took upon himself to say, that no steps would be taken by the Council in this matter except under the advice of their Honorary Solicitor.

Mr. SEDDON, Honorary Secretary, said it had been determined by the Council to print all that had appeared on the subject, including the proceedings of the recent special meeting.

LETTERS RECEIVED SINCE THE MEETING.

From EDWIN BULL, ESQ., *Architect.*

London, 16, Holles Street, Cavendish Square, W.,
May 11th, 1870.

The Government and Edward M. Barry, Esq., *re* Drawings of Westminster Palace.

Dear Sir,—A case bearing on this subject happened to myself very recently, and is as follows:

My father, the late Simeon Thomas Bull, was the architect to Messrs. Day and Martin's well-known factory in Holborn, which was burnt down in September last. I was applied to by the solicitor for the drawings, &c., and was paid the sum of twenty guineas on delivering them up.

I have always considered drawings to be the *exclusive* property of the architect, and should act accordingly.

I remain, dear Sir, yours faithfully,
EDWIN BULL, Architect.

From JAMES PEACOCK, *Fellow.*

15, Bloomsbury Square, May 12, 1870.

My dear Sir,—There is one practical point in our present question that appears to be lost sight of.

Assuming that signed contract plans may form part of the deed, all other details explaining them are supplied to the contractor for the use of the employer, and are not often returned, those retained are really only the copies for the architect's own use, guidance, and security. I might as well be asked to give up my private letter book.

The "Times" assumes that the employer has no plans for his money, but he has the set complete, and they are used and often worn out in his service.

What Mr. Barry is now asked for I assume to be his father's private copies.

Yours faithfully,
JAS. PEACOCK.

From ARCHITECTS PRACTISING IN LEICESTER.

Leicester, June 3, 1870.

Dear Sirs,—We cannot reprobate too strongly the attempt of the present Government to take from Mr. Barry the detail and general drawings of the Houses of Parliament.

They are decidedly the property of the architect. This has always been the custom here, and we know of no instance to the contrary.

We remain, Dear Sirs, yours faithfully,

WILLIAM MILLICAN,	JOSEPH GODDARD,
CHARLES BAKER,	JAMES BIRD,
R. J. GOODACRE,	M. J. DAIN,
WM. BEAUMONT SMITH.	

From THE NORTHERN ARCHITECTURAL ASSOCIATION.

Old Castle, Newcastle-on-Tyne, June 9th, 1870.

Gentlemen,—In answer to your letter of the 20th April, requesting the opinion of the members of the Northern Architectural Association relative to the ownership of drawings, I beg to forward you a copy of resolution passed at their meeting, as follows:—

"That the universal custom in the North of England has been for the contract plans and drawings, and all other papers necessary for affording a complete knowledge of the building, to belong to the architect, and to be retained by him on the completion of the works. That it occasionally happened that plans of drains or flues are given by the architect, on the completion of a building, but such plans are always supplied either as a matter of courtesy or paid for in addition to the usual fees."

I am requested to add that the Northern Architectural Association in their scale of charges published in April, 1861, and signed by the late Mr. John Dobson, have the following note appended:—

"NOTE.—The copyright of the designs and drawings are in all cases the property of the architect."

Moreover, on the authority of the late Mr. Dobson's successor, I was requested to say that during the fifty years Mr. Dobson was in practice in Newcastle-upon-Tyne his custom was to retain the documents above referred to.

I am, Gentlemen, yours faithfully,

THOS. OLIVER (President),

for FRANCIS CHARLTON, Hon. Secretary.

Royal Institute of British Architects.

At the Ordinary General Meeting, held on Monday, 30th May, 1870, Edward I'Anson, Vice-President, in the Chair, the following Papers were read :—

ON THE TAJ MAHAL AT AGRA,

By W. Emerson, Associate.

During a stay of three or four years in the East, one meets with so much worth describing that on being asked by one's friends in the cold civilized West, what one has seen, it is sometimes a difficult matter to know what people, countries, customs or buildings to tell about first; but in the spring of last year it was my good fortune to find myself in the cities of the old Moguls—Agra and Delhi,—and of all places I have been to, either in the West or East, I unhesitatingly affirm that Agra and the Taj-Mahal stand pre-eminent in the impression made on my mind.

Venice with its Grand Canal and St. Mark's, numerous palaces and art works;—Constantinople and the Bosphorus with the Sta. Sophia and Sulieman Mosques;—Cairo with its beautiful Hassan and interesting Tooloun Mosques, picturesque streets, and Coptic churches and ruins, and the huge ugly pyramids—and Bejapore with its big dome and elaborate Ebrahim Roza, all fall into the shade contrasted with Agra and its Taj-Mahal. Its romantic situation, dazzling brilliancy, excessive elaboration, and the particularly refined, though lavish display of wealth in its ornamentation, make it beyond all others a place in which a cold-blooded Caucassian can perhaps realize somewhat of the poetical and luxurious feeling of the voluptuous Easterns. It was this that tempted me, on the receipt of a note from the Secretary of the Institute calling my attention to one of the bye-laws, to offer a paper on this subject, hoping it might not prove altogether uninteresting.

The Taj-Mahal was built about the year 1040 of the Hijree, or 1662 A.D., about the time of the Restoration, and during the latter years of the reign of Kurreem Shah, the fifth of the Mogul Emperors, grandson of the great Akbar and son of Jehangir. He is more commonly known by his assumed title of Shah Jehan, signifying the King of Worlds. It was erected as a tomb for his wife, the Begum, Ungeman Bunnoo, whose title was Moomtaz Mahal, daughter of Azif Khan, and grand-daughter of the Nawab Ettmadowla. She was also called Taj-Mahal, and Noor-Mahal, which means the Light of the Hareem or Palace. She is immortalized in our own language in Moore's beautiful poem of 'Lalla Rookh.' She had four sons and four daughters, the youngest daughter's name was Dhahur Arra, at whose birth Taj-Mahal died. Shah Jehan was exceedingly fond of her, and on her death-bed he promised two things, first, "That he would never marry again;" and second, that he would build for her so magnificent a tomb that it should surpass all others the world ever saw.

The tomb is erected on the left bank of the river Jumna, and Shah Jehan's intention was, to have erected another for himself of equal splendour on the opposite bank, connecting the two by a bridge with silver railings, so that after death their souls might be enabled to hold spiritual communion with each other. He went so far as to put in the foundations of the second, when his demise put a stop to further proceedings, and he lies in consequence by the side of his wife in her tomb, her sarcophagus occupying the centre position.

The situation of the Taj is most picturesque; it is on rather high ground, and in approaching Agra, the dazzling white of its marble is seen across the hot plain glistening in the distance while yet many miles off. From the opposite side of the river (of which the photograph I have here is very good) the group of the Taj buildings is perfect, also from the palace of Agra in the Fort, where Shah Jehan held his court and had his Zenana—with the river winding to it from the foot of the palace walls, and the vast plain beyond with a few rising hills in the distance, the charm of its delicate white marble contrasted with the red sandstone buildings adjoining, and the dark foliage of the trees, in the dull red heat of a sultry day, is something truly wonderful.

The Taj buildings altogether form a parallelogram. They consist of the Taj proper, placed on a raised dais of white marble some 20 feet high and 300 feet square, situated in the centre of the end of the parallelogram immediately overlooking the Jumna, and flanked on each side by red sandstone buildings, separated from the raised dais by courts about 400 feet wide, paved with marbles laid in geometrical patterns. One of these buildings is a mosque, the other is of no use but for its architectural effect in contrasting and grouping with the Taj, and is called by the natives the Jawab, which means "answer," and I think very well describes its meaning and use. This Mosque and Jawab are of red sandstone and white and black marbles, and inlaid with precious stones, something similar in design to the entrance gateway I shall presently describe. On the floor of this Jawab are outlines of the dome and finials, and some other portions of the Taj, cut in the pavement for the men to work from. These three buildings take up the whole breadth of the parallelogram at the end as I said, overlooking the river. At the sides of the enclosure are massive crenellated walls of red sandstone inlaid with black and white marbles, with a walk all round behind the battlemented parapets. At the end opposite the tomb is the grand entrance to the gardens from the outer enclosure—which outer enclosure is a yard with entrance gates on each of the other three sides from without.

As one drives into the outer court yard and pulls up opposite the grand entrance, the beauty and magnificence of the place immediately strike one. The gateway is two stories in height, in elevation it has a large and deep central recess, a semi-octagon on plan, domed over and flanked on either side by two smaller recesses, those on the upper floors forming galleries, and with large octagonal turrets at the extreme angles surmounted by domes supported on columns and arches. The grand centre arch is also surmounted by a row of eleven little domes on columns and arches, and flanked by slender minarets; the effect of these is particularly beautiful. There is a photograph shewing this gateway. It is built of red sandstone, inlaid with white and black marbles. The spandrils over the arches are of white marble, inlaid with semi-precious stones in the same manner as the tomb itself, which will presently be described—only the work is of much larger design and rougher execution. The jambs are ornamented with twisted roll moulds. The gateway forms a square room with large entrance arches on two sides, the outside one being hung with gates, and on the two other sides smaller doorways leading to rooms on either side, and to a staircase which leads to the galleries over these smaller doors. A seat runs round the room, and on one side is a platform for the use of servants, soldiers and gatekeepers. The lower part of the wall has a dado formed of panels of white marble, enclosed by a border of inlaid white and black marble in a zig-zag pattern. Over and at the sides of the smaller side-doors, are the peculiar little arched recesses used for placing lamps in at the time of a festival. The friezes are inlaid with sentences from the Koran. This gateway is domed over, faced internally with white choonam (or plaster) and ornamented with black lines, raidiating from the centre, which accentuate the raised ridges dividing the little hollowed spaces, which form the surface ornamentation of the interior of the dome. The gates themselves are of teak, covered with a plating of bronze with a raised pattern on it, in shape a mixture of a quatrefoil and rectilinear figure. Through this gateway, at the end of a long

avenue of cypress trees, the centre of the avenue being occupied by marble fountains, basins, and flower beds, the Taj-Mahal dazzling the eyes with its whiteness is seen. On walking up the avenue and through the gardens, I could not help feeling it to be a more beautiful place than I ever dreamed of. There is almost every description and variety of flower, and on a hot day the cool sound of the water trickling along the little aqueducts which carry it to all parts of the grounds, the shady walks, and parts of the paths arched over by creepers, covered with flowers of most gorgeous colours; and the mango, guava, orange, lime and loquat trees, combine to make it a most pleasant resort. Leaving the gardens and ascending a flight of marble steps and crossing the platform of white marble, which in the bright sun dazzles the eyes so as to make them water copiously; and with "Salaam Sahib," "Salaam Sahib," from the old Mussulman priests at the entrance, one finds oneself in the inside of the Taj itself.

The contrast between the bright light outside and the solemn gloom inside is so great, that for some minutes you can see nothing. Gradually this wears off, and one sees tolerably well, though to do drawings inside I was often obliged to get natives to hold candles for me. The plan—which is shown by the drawing I have made, is an irregular octagon outside, while the centre room is a regular octagon, recessed on each side, and about 60 feet in diameter and 80 feet in height, with circular rooms in each angle of the building connected by passages running all round the centre apartment. Under this centre apartment is a crypt or small chamber, in which are the sarcophagi that really contain the bodies of Shah Jehan and Taj-Mahal. The centre portion of the inner apartment is screened off and contains the show tombs, on which the natives strew flowers, etc.

It will be seen from the plan, how light is obtained through the outer chambers and double walls, there being in no case a direct light into the principal room, and what does enter is broken by the trellis work that fills the openings. It is this that causes such a wonderfully cool and solemn effect on first entering. At each corner of the raised dais on which the tomb is placed are minarets.

The building is two stories high, the centre room running up the whole height of both stories. Access can also be had to the roof which is flat, and has four smaller domes supported on piers and arches, one over each corner circular apartment. The centre chamber is surmounted by a double dome —the one forming the ceiling being about 80 feet from the ground, and the upper one being about 260 feet high, and is the principal feature in a distant view of the Taj group.—The external elevation of the four principal sides is the same, also the four angle fronts are the same design. The arrangement of these façades is very simple. The principal ones are divided into three parts. In the centre part is a large, well-proportioned, recessed entrance arch, the height of the two stories, and surmounted by a parapet and two minarets, which being carried down to the ground as slender octagonal shafts, form the division between the main central recessed portion and the smaller parts which flank it. These side parts of principal elevations have two arched recesses much smaller than the central one, placed one over the other, and forming the two stories in height—and are exactly similar to angle elevations, being again divided from them by minarets as before described. All these recesses are square on plan, and have at back arched and square-headed openings, which are fitted with the marble trellis-work for admission of light. The domes which are over the four angles, are supported by piers and arches, the arches being foiled after the Saracenic fashion. The domes spring from a cornice formed of plain projecting slabs of marble, supported by cantalivers.

In the centre rises the huge bulbous dome, which forms the grand central feature of the Taj. It springs from a plain straight circular shaft, which rises to about the height of the tops of smaller domes. A plain twisted bead mould marks the springing. The peculiarity of this and other Mussulman domes in India is the bulbous shape obtained by making them swell out considerably beyond the springing line. This form obtains at Bijapore to a great extent. This dome is topped by a huge

gilded finial with a golden ereseent. The walls are mainly built of red sandstone, but eompletely encased with white marble. This is not done in the veneering fashion of Italy and Egypt. Each slab of marble is four, six, or even eight inches in thickness. In the construction of the dome and other plaees where it would not interfere with the after ornamentation, it is built up with the walls, laying first, a course as slabs of flat masonry, and then a eourse on edge, thereby obtaining good bond, and an external effeet of alternate broad and narrow eourses of about 18 and 4 inches in depth, so that rivetting was never needed.

This method obtained in many places in India, where their building stone was wedged out of the quarries in large flat slabs. About Agra and Delhi, all the buildings, whether of red sandstone or marble, were done in this manner; the interior of the walls was filled in with rubble. Also in the Myhekhanta and about Ahmedabad this is often found. Often, as in the case of the minarets to this Taj, the broad courses are done in white marble, and the narrow in black. The white marble of which the Taj was built eame from Jeypore in Rajpootana, and is beautifully white, picked portions being equal to Carrara.

Were it not for the elaborate inlaid work, which, as I shall presently show, partakes more of the nature of jewellery than architecture, this building would be the simplest in the world, but very effective nevertheless—first, of eourse, owing to its grouping and proportion, for which you can see the photograph. Then its large broad plain surfaces are undisturbed in their repose by any projecting mouldings, while the cool delicate shadows in the large arched reeesses, cause quite a sufficient balanee betwcen the light and shade. The spandrils to arches and the illuminated surfaces are as a rule set back about an inch. The plinth projects about an inch, and a slender string projecting very slightly aceentuates the parapet. I think these with the bead round springing of large dome, and eornices of smaller domes, and the leaves at apex, are the only partieular lines formed by shade throughout the whole external face of building.

One thing that lends a most peculiar eharm to this tomb, is the wonderful delicacy of the shadows, caused by the strong reflected lights. The pavement of the raised dais being all white marble it reflects in so powerful a manner, that it reduees the depth of all the shadows by quite a half, if not by more. The differenee between the shadows where the pavement is only common stone can be clearly seen on the photograph, where the shade in the arch of the mosque is two or three times as dark as the shade in recess of tomb. By moonlight there is a still more delicate tone about it, and I have often wondered whether it was in the mind of the architect to produce this effect, or whether it is the result of an accident; but the building is most suitable to a romantic idea of a tomb, for with its transparent pale grey and blueish shadows, and its wonderful beauty, it gives one, by moonlight, very much the idea of a ghost itself.

One general feature in the ornamentatiou of the Taj is the inlaid black marble. Every angle, arch, panel, reeess, in fact the outline of each component part is marked by lines of black marble, either one, two, three, or more inches in breadth, aecording to the size or importance of the detail requiring accentuation. This of course aecounts in a great measure for the absence of any mouldings, and I am inclined to think this method of ornamentation, or more properly aeeentuation, disturbs the grand repose of a building much less than any other method employing shade as the means. The sides of the raised dais on which the Taj stands are relieved by two rows of panelling, the lower row with trefoiled heads; each trefoiled reeess being slightly sunk and enclosed in a square-headed panel. The spandrils over trefoils are ornamented with circles filled with carved flowers. The upper row are simple plain sunk parallelograms. There is a small balustrade protecting edge of dais about eighteen inches high, formed of little marble pillars, square on plan, with knobs on the top, and plain marble slaos, with lines of black marble inlaid, forming panels. In the centre of three of the sides of this dais are rooms or eellars,

with small square-headed doors; and three of the before-mentioned panels are formed of pierced marble work for the admission of light. These would probably have been for the use of servants if the Taj had ever been used as a palace, as other Mahomedan tombs, which were usually built by great personages who used them as palaces during their life-time, and as tombs at their death. But owing to the interment of Taj Beebee directly the Taj was completed, I suppose it was never used as a place for festivities. On the other side of the dais, facing the entrance, are the marble flights of steps up to the mausoleum.

Probably the greatest ornaments to and most perfect pieces of work in connection with the Taj are the four minars at the corners. They are about 200 feet high and about 20 feet diameter at the base. But the proportion of these is so subtle, that the slightest alteration by either increasing or decreasing the diameter, or taper, or height, one feels would immediately spoil their effect. They are most elegant, but have not the starved appearance of the minarets of Egypt, Constantinople, and Delhi. They are three stages in height; at each stage a light balcony, supported on cantalivers, running round the tower, and they are surmounted by domes on little columns, and foiled Saracenic arches and gilt finials. Winding stairs take one to the summit, to which stairs access is obtained by means of square-headed doors.

I mentioned before that each course of white marble is divided by a narrow course of black, which in the distance gives an appearance of very thick joints, and makes the circular shaft tell out wonderfully in perspective.

There is a twisted bead mould under the cantalivers of balconies, which balconies are of the same design as the parapet round raised dais. These cantalivers, the little arches to dome, and a simple inlaid pattern immediately under balconies are the only ornamental parts in the minars.

The mausoleum itself is ornamented to a height of about 6 feet, with panels forming a sort of dado, edged with a border of inlaid work in semi-precious stones of various colours, and each panel being carved in relief with flowers growing out of pots, the lotus, rose, &c. The carving of these is very beautiful, finished as finely and polished in every little detail as any Italian work, and with all the freshness of design and arrangement of mediæval art. Around the arches the Koran is illuminated in black marble; in this manner it is said the whole Koran is inscribed on the Taj walls. The spandrils of the arches are inlaid with a flowing ornament of graceful design in semi-precious stones. The angle shafts forming minarets have zig-zag lines inlaid in black marble. Under the parapets is a running pattern, also inlaid; and in the parapet itself is an inlaid pattern of bold design in coloured stones. The recesses are panelled, each panel enclosing a little pointed Saracenic arched, and foliated recess. These little arched recesses being to hold lanterns. The soffit of the arch over the main recesses forms about a third of a dome, and is ornamented by working the stone after a peculiar design, which has the effect of minute and elaborate groining. Around each of the entrance doors are friezes, again illuminated with sentences from the Koran, and spandrils of coloured stones. At the springing of the dome there is also an inlaid ornament of black marble and coloured stones. The finials of all the minarets and of each of the domes are ornamented with large plain carved leaves.

The interior is in the same manner as the outside, ornamented with a carved and inlaid dado, but the carving is richer, and the inlaying more elaborate. There are only three or four patterns of the carving on the dado, but these are reversed so cleverly on opposite sides that it would not be noticed unless special attention were paid to it. The interior has over its eight recesses, two tiers of pointed arches; the upper tier forming galleries. The dome springs immediately over the upper arches, the spandrils between arches being worked into pendentives, and changing the octagon of the walls into the circle of the dome. The same system of ornament as on the outside is found. Utter absence of projections or mouldings, not even a splay. All effect obtained by inlaid ornamentation in black marble and

coloured stones. The panels in sides of recesses are marked by lines of black marble as on the outside. The spandrils of lower arches are inlaid with semi-precious stones. At back of each recess are the large windows, formed of trellis-work, all plain geometrical piercings, and in many instances the openings stopped by thin laminæ of talc instead of glass.

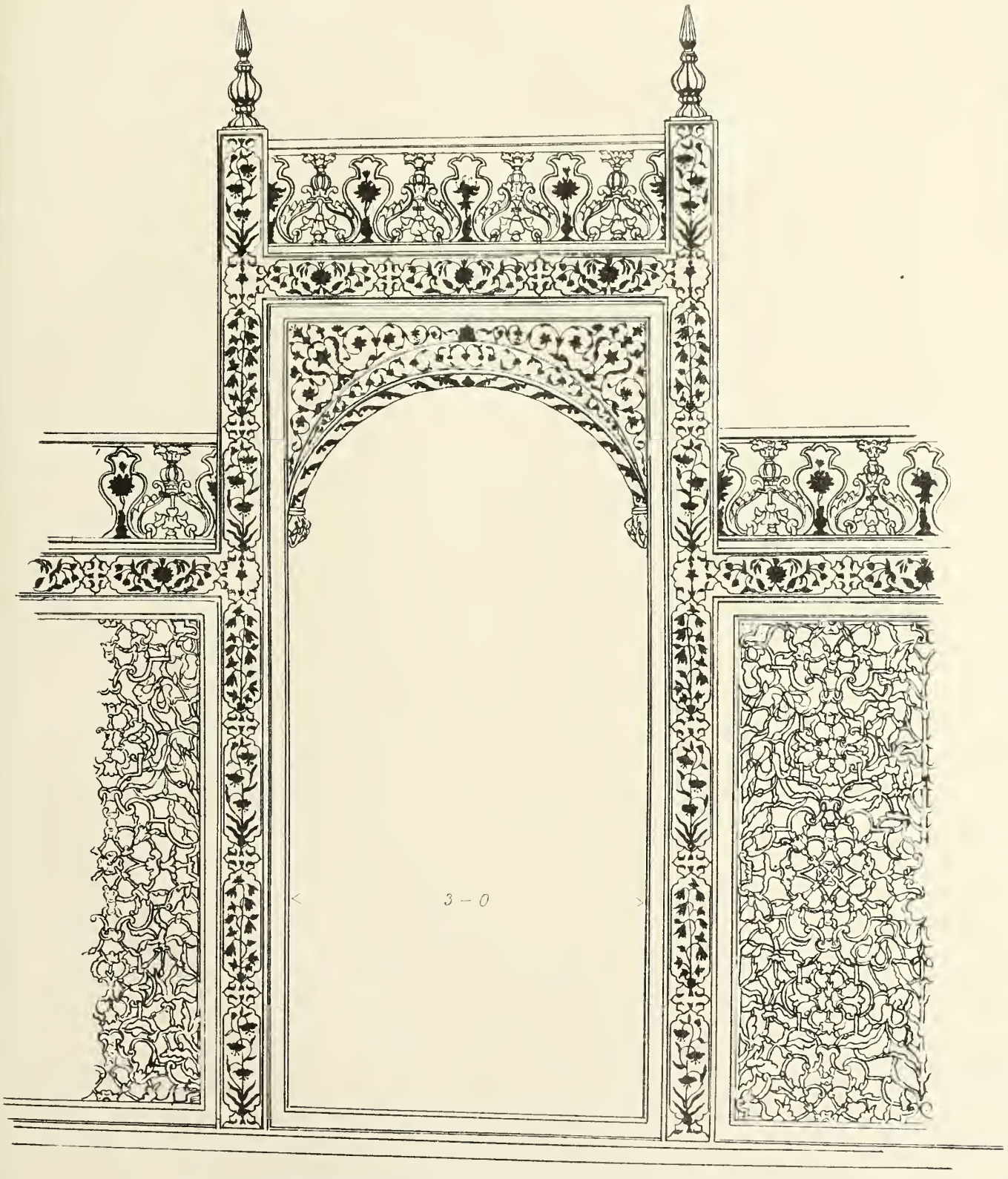
The dome, which is very dark, is covered all over with the pattern peculiar to Indian Mussulman architecture, which is formed by lines radiating from the centre, crosswise, and the spaces thus formed (which of course increase in size as the lines approach the springing of dome), are hollowed; by this means the radiating lines are in reality formed by the ridges dividing the hollowed spaces. This is often elaborated to such an extent that it is impossible for the eye to follow the pattern. In this dome over the tomb there is no colour at all, but in the domes over the entrance gates, and the mosque and jawab at sides of tomb, the ground is either white and the ridges marked with black lines, or the ground red and the ridge radiating lines marked with white, which has a very good effect. The pendentives are ornamented in a similar manner. The two rough sketches show something of the difference in effect between the simplest sort of style of ornament and that used in the Mahomedan architecture of Egypt, Syria, and Spain. The floor is of white and black marble, in geometrical patterns.

I now come to the part of this building which is the most wonderful and elaborate portion of it all, namely, the tombs and the screen enclosing them, all of purest white marble. The screen encloses an octagonal space. The detail which I show, will, I think, explain it better than my words. However, each side of the octagon is divided into three bays — the centre bay of the side facing the entrance door is an archway into the enclosure, all the other bays are like to each other and of similar design to the part at side of arch. At each angle, and between each bay, are posts supporting perforated screens, each of a single slab of marble. The drawing gives some idea of the perforation, though it is to so small a scale that it was impossible to put in the detail of the flowers. I greatly regret I had not the time to make a finished drawing of a portion full size. It is very Italian in feeling. An eighth portion of it contains the whole design; this is reversed and turned upside down to form the whole screen. It is, I should think, the most elaborate piece of marble perforation in the world, and is polished all over; both sides are finished alike. The screens are surmounted with a sort of balustrade of carved and inlaid work.

But the most extraordinary part is the inlaid work on the pure white marble posts, rails, arch, and tombs. The tombs, both in the enclosure and in the crypt below, are simple parallelograms about 2 feet high, with a small sarcophagus in the centre of each, on a plinth formed of two cymatium members, and fillets, and the top slab having an ogee mould.

The inlaid work is most elaborate, representing all sorts of flowers, worked in semi-precious stones —the stones carefully picked for each particular leaf, so that all shading and drawing of leaves is obtained by the graduated natural colour or marks in the stones themselves. At the side of the central tomb is the following inscription, in Persian:—"The splendid tomb of Unjeman Bunnoo Begum, "whose title was Moomtaz Mahal, was made in 1040 of the Hijree," and on the side of the other is: "The magnificent tomb of the king, inhabitant of the two heavens, Ridwan and Khool, the most "sublime sitter on the throne of Illeeyn (*i. e.* starry heavens), dweller in Firdoos (*i. e.* Paradise). Shah "Jehan Badsha Gazee, peace to his remains, heaven is for him. His death took place the 26th day "of Rujub, in the year 1076 of the Hijree. From this transitory world eternity has carried him off "to the next."

The drawings which I show are full sized, and as nearly facsimiles as I could make them, and will explain the sort of ornament which, it will be seen at a glance, is something similar to Florentine work.



WHITE MARBLE SCREEN IN TAJ, INLAID WITH PRECIOUS STONES.

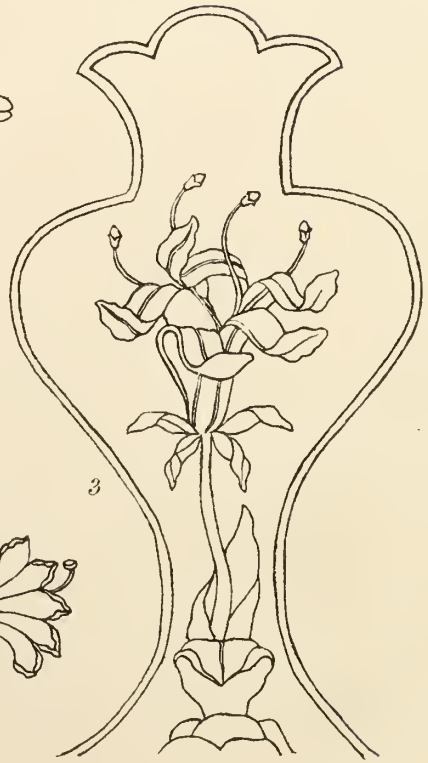
SCALE

12 6 1 Feet

Photo-Litho^{d} for the R.I.B.A. by Whiteman & Bass, London.

1

2


3

4

5

6

7

8

9

10

11

12

13

14

15

1,2,3,4,5,6. *Inlaid work in Screen or tombs.*

7,8,9,10,11. *Flowers carved in low relief.*

12. 13. *Perforated marble.*

14. 15. *Inlaid ornament in Spandrils of Taj.*

Nos 1,2,3,4,5,6. Scale rather less than half full size.

Photo-Litho.ª for the R.I.B.A. by Whiteman & Bass London.

In some of the roses, which are no bigger than a franc, there are thirty pieces of stone, and the jointing is generally scarcely visible. It is, in fact, jewellery. Indeed, in the centres of the flowers on the head of the tomb there were originally large emeralds and rubies, but these were stolen during the Maharatta wars. The ornament is in some places of a flowing pattern; in others, like little trees in full bloom, with magnificent flowers. The colours of the stones are arranged with such taste, and the effect is so quiet, that it is only after looking about for some time that one finds out what it is that gives the interior such a rich appearance. Not a single flower forces itself unduly on the eyes, and I have seen Europeans walk for the first time into the Taj, and go all round and out again, without ever noticing anything particular in the ornamentation of this screen and tombs. What they do notice at once is the soft echoing of every little sound. A musical note echoes and re-echoes through the dome, gradually and softly dying away. The natives believe these voices to belong to the unseen heavenly bodies, who watch over Noor Jehan and her husband. The most delicious harmony I ever heard was some singing by ladies in this tomb. The interior has the most solemn effect on one's mind—there is an amount of pathos in it that causes feelings in a sensitive person much the same as reading an affecting melancholy love story, so much so that it almost forces tears to one's eyes.

The white marble came from Jeypore, in Rajpootana, the black from a place called Charkoh, the yellow from the banks of the Nerbudda, and red sandstone from Futteepoor Sikree, about 15 miles from Agra. The stones used in the inlaying are crystal, jasper, blood-stone, cornelian, agate, lapis-lazuli, turquoise, coral, garnets, plum-pudding stone, rock-spar, onyx, chalcydony. There were also a few emeralds, rubies, sapphires, and amethysts, but they have all disappeared. There are said to have been silver doors at the entrance, looted by the Jâts, at the commencement of this century. The whole cost is said to have been about three millions of our money. It took seventeen years in building, and labour was all forced —the workmen being kept on a daily allowance of rice, &c. Orientals say it was built by one Isa Mahmoud, an architect sent from Turkey to Shah Jehan for the purpose. Others say a man named Austin de Bordeaux, a French architect, designed it. As to whether purely Oriental, or in some measure European, I should be afraid to give a decided opinion. I think there is much of Italian feeling in the screen, and also in the four minarets and some details of the cantalivers. But then at Bijapore and other places in India I thought the same with regard to many details, and no one seems to doubt that the art of Bijapore is purely Oriental. Still it is possible that Italian artists may have had something to do with it in detail; and I believe in some old manuscript accounts, mention is made of payments to a foreign artist. But this may have alluded to Iza Mahmoud or Persian artists. It was built at a time when Italians were to be found all over the world, fleeing from ducal tyranny, and some may have found their way into the centre of India; and they could have ingratiated themselves in no more favourable manner with the luxurious Mogul Emperors than by assistance in the art of magnificent building.

On festivals and holy days crowds of natives go to the Rambagh or gardens, and Taj, and swarm all over the place; and the bright and gay colour of the men's turbans and women's sarees causes the platform and courtyard around the Taj to look like a bed of flowers—very different to the dismal effect of a crowd of Londoners.

The inlaid work with which the buildings of Agra and Delhi abound is still done by natives, who make table-tops, chess-boards, &c.; but their art is as inferior as possible to this screen in the Taj, or the Zenana in the Fort of Agra, in both design, drawing, execution, and choice of stones.

The architecture of Ahmedabad and Bijapore is very different to that of Agra. The celebrated tree-window at Ahmedabad is the only piece of work that could vie with the highly-finished and delicately-designed jewellery of the Taj and the palace. The Ebrahim Roza of Bijapore has much

elaborate carving and cutting—being built of a soft stone—but cannot be compared to the refined ornament of Shah Jehan's marble architecture. The palace at Delhi and Agra, and more especially the Zenana in the latter place, are in the same style, and almost as elaborate as the Taj. In the Zenana, were numerous precious stones, such as emeralds, rubies, &c. It is round a room in this style in the Delhi palace that Akbar had illuminated the renowned sentence—"If there is a heaven upon earth it is this, it is this." And if heaven consists in the gratification of the senses, I should say these people realised it; for, on a sultry afternoon—the heat hushing even the birds, and the cool, refreshing plash of the glittering fountains, seen from, and resounding through the beautiful attar-scented marble halls—these children of luxury, in languid repose, sipping their sherbet, in the calm and full enjoyment of their hulwar and their hookahs, might have been excused if they did almost fancy themselves in heaven.

In reply to Professor Donaldson,

Mr. EMERSON stated, that such repairs to this structure as were needed were done by the government, but little was required. The gardens were kept up in a good state.

Mr. WYATT PAPWORTH, Fellow.—That is a question I was going to ask myself. I have heard that a large portion was out of repair. A great many years ago several chests of inlay wall were brought to this country for sale, and I should be glad to know from what part they were brought, as I understood they were brought from this Taj. I should also be glad to know whether Mr. Emerson was able to ascertain what the construction of the roof of the dome is. [Mr. EMERSON believed it to be of sandstone: all cut stone.] [Professor DONALDSON.—Is it true that in these minarets there is a centre staircase and newel?]

Mr Papworth having proposed and Mr. Seddon seconded a vote of thanks to the author of the paper,

The CHAIRMAN said, it is with great pleasure that I submit the proposition that our thanks be given to the gentleman who has favoured us with a most interesting communication. The form of this building reminds me very much of the buildings we met with in Constantinople and Maseam, where, I believe, all the minarets are formed with a centre staircase and newel. The overhanging platforms at different stages of the minarets are very novel pieces of construction, and I think there can be little doubt that Italian architects, who at that period pervaded the whole of the civilized world, had some hand in these structures. If this monument had been in a French instead of an English dependency, we should have had most accurate drawings and details of this remarkable work by the government. I have often thought it is a great pity that our government does not make these works better known. Individuals in their love of art and in their generosity have done much to make these monuments known, and this contribution is an addition to our knowledge for which we are greatly indebted to the author. I hope before many years to make a personal inspection of these wonderful monuments in India.

Professor DONALDSON.—The government, through the Royal Engineers, have taken beautiful series of photographs of Indian buildings, some of them of large size, shewing the details with great minuteness. Before I saw this model I had no conception of the beauty of the details of this Taj; every part is so well poised, the central dome rising to a great height, and the minarets at the angles rising most gracefully to a height of 220 feet. That is higher than the Prince Consort's Memorial erecting in Hyde Park. In Daniell's Views of India, and also in Orme's work, there are some fine illustrations of this beautiful monument. The effect of the inlaying is most charming, and is executed very much in the style of the Florentine work. Some pieces of this Taj were exhibited by the side of some Florentine work in 1851, but the superiority of the former was manifest, and showed that artists of great skill and ability must have been engaged upon it. I have

been told that this is the most beautiful monument in point of style and proportion that is to be met with in the world.

Mr. C. F. HAYWARD.—It seems to me most desirable that we should, if possible, have the means of investigating the construction of such remarkable buildings as this, and that it is the duty of the government, as far as possible, to give us representations and information with respect to these grand buildings in India; but hitherto we are chiefly indebted to private sources for such information as we have.* I did not however rise for the purpose of saying that, but to state how strongly I have retained in my mind the recollection of the remarks of the late Mr. Cockerell in his lectures, when he spoke, as he so frequently did, of the beauty of "four-square" buildings; and I can scarcely conceive anything which more realizes the late professor's ideas on that subject, than the beautiful monument which has been brought under our notice this evening. The extreme simplicity, the extraordinary delicacy of its arrangements, the answering of one corner to the other—all deserve remark. I have never ceased to recollect that portion of Professor Cockerell's lectures, while most of the rest has unfortunately faded from my mind.

The vote of thanks to Mr. Emerson was unanimously agreed to.

---

* It may be mentioned that the Institute Library is indebted to the Hon. East India Company for the following valuable contributions of photographs, &c., taken to illustrate the architectural monuments of that empire:—

(*a*) Series of Photographs from drawings of the Jumna Musjeed, Gol Goomuz, Ibrahim Rozah, and Mehturee Mehul at Beejapoore in the Deccan.

(*b*) Series of Photographs from drawings of buildings at Beejàpoor, viz., the Taj Bowree, and the Ashar Moobaruck.

(*c*) Title Pages and Index of Series of Photographs from drawings of ancient buildings at Beejapoor in the Deccan.

(*d*) Architecture of Ahmedabad; by T. C. Hope and J. Fergusson.
Architecture at Beejapore; by Col. Meadows Taylor and J. Fergusson.
Architecture in Dharwar and Mysore; by Col. Meadows Taylor and J. Fergusson.

ON A SCROLL FROM THE CHURCH OF ST. JOHN THE BAPTIST, CHELMORTON, COUNTY OF DERBY.

By Fairless Barber, F.S.A., Hon. Sec. of the Huddersfield Archæological Association.

The scroll, of which a full-sized tracing is produced, was met with in the south wall of the south transept of Chelmorton Church in the month of May, 1869. The church was then under restoration by Mr. Currey, a Fellow of the Institute, and the wall on which the scroll was found having to be re-built, I consider myself fortunate in having been the means of preserving some record of it.

The church is situated high up on the hills about four miles to the south of Buxton, and it serves a parochial chapelry of some extent in the large parish of Bakewell and diocese of Lichfield. Till its recent and not yet completed restoration, the structure, which is of considerable interest in itself, had suffered very much from neglect, and only by an accident has this specimen of ecclesiastical wall decoration been discovered and preserved. The contractor for the works in progress there, struck off some plaster near the windows inside to see what coigns there might be that could be used again, and in doing so disclosed on several of the successive coatings of plaster and whitewash, traces of more than one series of coloured decorations, which had been painted on the walls at different periods.

My attention was called to this discovery by the Rev. R. W. Foulger, then curate of the church, and no time was lost in making an examination of the walls, which in a few days were to be taken down. In most cases owing to the damp it was impossible to uncover with success more than small patches, but it was clear that all the walls of the little transept had once been covered with texts and sentences. The first met with were comparatively recent and of no special interest, consisting so far as could be made out of passages from the Proverbs of Solomon, closely written in black letters in straight lines so as nearly to cover the walls; beneath these, the removal of two or three coatings of

plaster revealed other work, of which nothing could be made out but that it had consisted of writing on the wall, and it was not until the removal of all the plaster and the surface of the wall itself was reached, that the grand scroll produced was met with. It was boldly and vigorously drawn in distemper with black lines; the back of the ribbon was coloured a golden yellow and dotted with red stars, and the orange tree round which it was twined, had the leaves coloured in two shades of dark green, and the fruit of a bright orange.

In the reduced drawing I have reproduced the colours, which were remarkably fresh, as nearly as I could. A simple calcareous wash of a creamy colour had been laid on the limestone wall, and this was all the ground on which the work was executed. Only those lines that could be distinctly traced are represented. There had, however, been a few others, the indications of which were too fragmentary and uncertain to be followed, and it may be supposed that they would have added greatly to the beauty and symmetry of the whole. Towards the bottom, on the left hand, the leaves had been destroyed in the search for coigns. Enough, however, has been preserved to give the general character of the decoration.

All round the walls of the transept there had been similar scrolls, each bearing one of the beatitudes in English.

The Church itself contains details of various dates, commencing probably as early as the twelfth century, and the transept in which this work occurs must, I think, have been re-built and enlarged in the sixteenth century, the old windows being used again. Be this as it may, it does not seem possible to ascribe a date earlier than the beginning of the seventeenth century to a scroll bearing a text in English and associated with an orange tree. The 82nd of the Canons of the Church of England, agreed upon in the Synod, begun at London in 1603, provides for chosen sentences to be written on the churches and chapels in places convenient, and it may be that this text on this scroll was written in obedience to this Canon. Orange trees were then still costly, and had not long been introduced even into the gardens of the rich and noble. In the 'Survey of the Manor of Wymbledon,' "late parcell of the possessions of Henrietta Maria, relict and late Queene of Charles Stuart, late King of England, made in November 1649" (*Archæologia*, Vol. X, p. 339), "fortie two oringe trees, bearinge fayre and large oringes," are valued at ten pounds a tree, one tree with another.

My friend, Mr. James Fowler, F.S.A., has also reminded me that the orange tree—which is said to have always fruit in various stages of growth upon it, and even blossom and fruit together, has a symbolical meaning, which might bring to the minds of worshippers the idea so well expressed in George Herbert's lines on "Employment":

"Would that I were an orange tree,
"That busy plant!
"Then should I ever laden be,
"And never want,
"Some fruit for him that dressed me."

If my conjectures are correct as to date, I shall be glad to have called the attention of the Institute to an effort at wall decoration for a church, made at a somewhat critical period in the history of architecture, when anything like art was seldom found in churches. Should any desire to pursue the subject further, and in greater detail, I may mention, that traces of what is believed to be similar work have been noticed in the domestic chapel at Haddon Hall, where some day or other it is to be hoped they may be closely examined by competent persons.

On the motion of Professor DONALDSON, the thanks of the meeting were unanimously accorded to Mr. Barber for his communication, after which the meeting adjourned.

ANCIENT DECORATIONS DISCOVERED AT S^{T} NICHOLAS CHURCH, GREAT YARMOUTH

N° 1

Scroll found beneath the Cornice of South Aisle to the Nave

N° 2

Scroll found beneath the string course under Window in west Wall of same Aisle.

N° 3

Ornament found at a lower level on the same Wall as N° 2

John P. Seddon, Arch^{t}

Royal Institute of British Architects.

At the Ordinary General Meeting, held on Monday, the 13th of June, 1870, E. I'Anson, Vice-President, in the Chair, the following Paper was read :—

ON SOME RECENTLY DISCOVERED EXAMPLES OF ECCLESIASTICAL DECORATION.

By J. P. Seddon, Hon. Sec.

Mr. John P. Seddon, Hon. Sec., proceeded to give a description of some recently discovered examples of ecclesiastical decorations at St. Nicholas Church, Great Yarmouth, and Llanbadern Church, near Aberystwith. He said :—The position in which those of Great Yarmouth were found, was on the south and west walls of the south aisle of the nave. No. 1, formed the border immediately under the stone cornice of the south wall. The walling beneath it was lined out in imitation of courses of masonry, with brown and red lines side by side. The scale of this decoration was fine and bold, and it is evidently, I think, thirteenth century work, the same date as the aisle itself. It is in distemper, and the colours vermilion with black lines, and characterized with remarkable freedom in its curvatures and fulness of detail, and the overlapping of some parts of the ornament is peculiar. The smaller one, No. 2, ran immediately below the string course under the large window in the west wall of the south aisle, but did not continue along the south wall, while it has some correspondence with the previous examples in the trefoil-shaped ends of the scrolls, it is different in character, being very delicate in detail, and particularly playful in its treatment. The other large one, No. 3, which is somewhat coarse in comparison with both the former examples, came at about two-thirds the height of this west wall below the window, and in a line with the string course under the windows of the south aisle. It is less elegant and much more formal than the others, and resembles some of the Byzantine decorations at St. Mark's, Venice, and elsewhere. The colours used in the two last named scrolls are more various, and consist of vermilion, black, brown and green, all earth colours, quiet in themselves and harmoniously combined. These are the only three decorations we could discover, excepting that the face of the walls shewed occasional indications of their being lined out with brown and red lines in the manner I have described.

The other example is from exactly the opposite side of England, or—to speak more accurately—Wales, for Llanbadern is in a suburb of Aberystwith. The scale of this nave is almost identical with that of the side aisles of St. Nicholas Church at Yarmouth. Those were 40 feet in the clear of the walls, and this is 40 feet outside them. This church must have been more richly decorated, but unfortunately it was difficult to retain anything worth keeping. We discovered at the west end of the north wall an immense painting in distemper of St. Christopher bearing a child, but we could not disengage it from another painting above or below it, which appeared to have represented St. Peter bearing the keys, with a cock crowing, and other animals and buildings in a sort of rude attempt at a landscape. I asked an artist, Mr. Cole, to make a careful drawing of the exact condition of these paintings, and this is before you. I pleaded hard that these interesting fragments of early decoration might be kept, but during my absence they were destroyed as being unsightly, though to my mind the present plain plaster is not

more beautiful. The whole church was once decorated with figures on a large scale, and this figure of St. Christopher could not have been less than 18 or 20 feet high. Llanbadern Church is said to have been originally a cathedral, but is evidently of the type of a parish church, though on a noble scale, as is St. Nicholas, at Great Yarmouth. This imperfect record of the manner in which they were decorated, will therefore, I hope, be not devoid of interest to the meeting.

Professor DONALDSON, Hon. Sec. For. Corr.—St. Christopher seems to have been a favourite subject for decoration in churches, and it is a remarkable circumstance the enormous size of St. Christopher and the small size of Our Saviour. The whole is traditional, and the illustrations are carried out with remarkable capriciousness. In foreign churches too, we find this large figure of St. Christopher associated with other figures of much less size, and he is always represented in gigantic proportions compared with the other figures in the decorations. In most churches this figure is placed on the north wall, but I do not know whether there is any tradition which gives favour to that position over any other. With regard to Great Yarmouth Church, the decoration reminds one of the Greek decoration—the vases, the flowing lines, without rigidity or stiffness, but flowing, harmonious lines, all the parts running into each other with great grace and beauty; and it appears to me to be a very beautiful specimen of that class of coloured decoration. The other example is unique in its flowing tracery, and the colours are harmonious and would be very striking in the position in which they were placed. The third example is a more conventional form, being bounded with darker lines to define more particularly the shape of the different parts. There are three distinct classes of art to be found in these different specimens in Great Yarmouth Church, and I should like to know whether Mr. Seddon has been able to define the dates. The one down below seems to me more ancient than the other. [Mr. SEDDON.—I think not more ancient, I take them all to be thirteenth century work]. The middle one seems later. [Mr. SEDDON.—It is more delicate in its treatment, but portions of the ornament in it correspond with that of the others.]

Mr. E. NASH, Fellow, said that he was of opinion that all the specimens exhibited were of the same date, and as to their classic features, the thirteenth century was the classical period of mediæval art.

Mr. PENROSE, Fellow.—With regard to St. Christopher, he appears to have been pretty impartially dealt with as to the position in the church in which he is placed. I know that in the St. Clemente Church, at Rome, he is placed on the south wall, and in the church of Bradfield Combast, near Bury St. Edmunds, he is placed upon the north wall; and as far as I have observed, the position north or south appears to be pretty equally divided.*

Mr. SEDDON.—I have met with a very interesting example on the outside of a church on the banks of the Moselle, where it was on the left-hand side of the west door.

The thanks of the meeting were given to Mr. Seddon for his communication.

---

* St. Christopher is uncouth and gigantic as usual, with the figure of the Saviour on his shoulder, according to the well known legend. He is always represented thus on the north wall of church walls, facing the south door, with allusion to baptism, He who sees him is lucky for a day or week—I forget which. The Saint is represented wading among fish, and grasping a club or staff. The hermit awaits him on the shore. . . . . The figure of St. Christopher was immediately over the north door, as Mr. Burgon states was the universal case; the colours were more clear when it was first uncovered, and it seemed, as he surmises, to have been painted over another picture. The legend of this Saint is well known, and the old verses beginning, I believe, with "Si Christopherum videris," and ending with a promise of good fortune to all who had seen him during the day, seem to have been a great encouragement to a regular attendance at daily prayer in church, as his figure was almost universally represented there.—'Paintings on the Wall of Bardwell Church.' By A. P. Dunlap. (*Suffolk Institute of Archæological Proceedings*, vol. ii.)

SUGGESTIONS ON THE ARCHITECTURAL VOLUNTARY EXAMINATION OF THE INSTITUTE.

By Professor KERR, Fellow.

Addressed to the Ordinary General Meeting, 13th June, 1870, E. I'ANSON, Vice-President, in the Chair.

I do not desire to open my discourse with an apology, but a few words of explanation are necessary to enable you to understand why I take the liberty of submitting my remarks to you on this subject at this time. In the first place, a vacancy was occasioned in the proceedings of this evening by the unexpected postponement of a paper which was appointed to be read, and it was necessary that some one should come forward to fill the gap. Then, for myself I have to say this. Having been appointed, with Mr. Penrose and Mr. Aitchison, to act as Examiner for the present year; and it being a rule that the Examiners and Moderators and others connected with the working of the scheme should, as a special committee, advise the Institute as to any improvements which may from time to time appear desirable; and this being the last meeting of the session; it seemed to me on the whole that it might not be inappropriate to lay before this meeting such suggestions as one member of the committee has to submit to the others, with a view to promote observations on the part of those who are present, as a contribution generally to the future discussion of the subject. In brief, the Committee formed by the Examiners and Moderators will sit in the recess; and the opinions which I submit to you to-night are those which I individually have to submit to my colleagues, and upon which I take the liberty of now inviting a preliminary discussion. But there is one other circumstance which I think I may mention without egotism. To show you how long I have been interested in this subject I hold in my hand a scheme of my own for architectural education, bearing date as long ago as March, 1852; so that I may venture to ask you to remember me as one of the earliest pioneers of this movement.

In whatever consideration we give to the improvement from year to year of this important undertaking, it seems to me desirable, or rather essential, to keep very strictly in view, and not allow to escape from our minds for a moment the purpose of the Examination.

This purpose I take to be twofold; firstly, academical; and, secondly, professional. The academical purpose, as you will remember, arose by reason of those reflections which have been cast upon the system of education in England by pupilage in architects' offices. It was pointed out most urgently that this system of pupilage, taken as a sole means of education, is manifestly defective; and we were called upon to observe the different system of education which prevailed on the other side of the channel, which produced, in the opinion of some authorities, much superior results. The Institute was urged to supply something of supplementary training in the form of academical instruction. This could only be effected by means of private reading and study; and accordingly a curriculum was carefully devised in this form, of which the Institute consented to take the responsibility, so as not only to encourage self education, but to give it a particular line of action and definite limits of academical necessity. This, then, is the educational purpose which has been in the mind of the Institute with reference to the establishment of the Examination.

The other purpose, I say, was professional; and it came about in this way. A considerable amount of controversy was set up in various quarters in favour of establishing for practising architects a diploma. This proposal was for years known as "the Diploma question." A large number of members of the profession were found to be of opinion that it was essential, in one form or

another, for this profession of ours, like those of medicine and law, to possess its diploma, or license to practise. The subject was elaborately discussed by the Institute. It was pointed out that it was impossible for the profession to appeal to the government, with a view to procure any kind of prohibition against persons practising the profession without a license; and this I presume is now admitted. But it appeared at least equally plain that it was advisable for some definite professional if not legal act to be instituted, whereby he who possessed the proper training and accomplishments for practising as a useful architect should be acknowledged by authorative recognition, leaving those who had no such merits to make the best of it. This, then, was the professional purpose with which the Institute undertook this Examination.

It is on this twofold ground, therefore, generally speaking, that the project has stood for some seven years past; and the present Examination is the fourth that has been held, the dates being 1863, 1864, 1866, 1870. On each of the previous occasions we have had to consider, with due regard, of course, to the undesirability of disturbing the scheme further than would be absolutely necessary, whether we could take any further steps in the right direction; and on this occasion we have to do the same. Accordingly, I may at once point out for myself that my desire this evening is not to submit to you any radical change, or even any thing which may provoke controversial criticism, but simply to point out my own individual view as to what further steps in the right direction we may now consider ourselves able to take.

The impression on my own mind, as to the character of the results of these Examinations, derived from a considerable amount of attention to them, is what I have first to state to you. I would point out that the examination itself is a thing of three parts, or in other words that we have three Examinations. The first is probationary or preliminary. The second is an ordinary pass examination of a final character, for which a certificate of proficiency is to be granted. The third examination is one for distinction, and is a repetition of the second as nearly as possible, differing from it chiefly as matter of degree, not going into any further field, but taking a higher position on the same ground. Thus it appears that the standard examination of the scheme is the one of "Proficiency." On passing that examination the candidate receives his certificate; and it is this certificate or diploma (I see no reason for hesitating to call it a diploma) that constitutes the professional recognition from which so much is expected ultimately to result in the practical advancement of the profession.

Now, the scheme of the Proficiency Examination in few words is this. The candidate first submits some design and drawings of his own. He then subjects himself to an examination extending over a fortnight, and occupying four days in each week, with hard work for each day. The subjects are these: He prepares a design for a building, the subject of which is dictated by the Examiners; for this two days are allowed. Then he is engaged upon Mathematics for three hours; Geometrical Drawing and Mensuration for three hours; Professional Practice for four hours; Theoretical Physics for four hours; Materials, always a very difficult subject, and one which must cause a good deal of hard labour, for six hours; and Construction, again a difficult and advanced subject for a young man, for six hours. Lastly, in another four hours, he is expected to write two essays under the head of History and Literature, one being upon general history, with reference incidentally to the subject of architecture; and the other upon some purely architectural subject, which the candidate is entitled within limits to choose for himself. This work goes over the whole fortnight, as I have said, with two days in each week missed.

The first thing which struck me on considering this matter was the fatiguing character of the examination. Let me here remark once for all, that such illustrations as I am able to offer, from the actual working of this year's Examination, must obviously be of a very general character. Accordingly, as an instance of the fatigue involved, I can only say that you have heard to-night that one candidate,

much to the regret of the Examiners and Moderators, broke down altogether towards the end of the Examination. Let me observe that the whole of his labour was consequently lost. I may further say, I have understood that other candidates on former occasions have broken down, or very nearly so. I have understood also that one gentleman, who was very anxious to pass, said the labour of the Examination was so great that if he failed he could not undertake it another time. Therefore you will not be surprised if I say the fatigue of this examination made a strong impression on my mind; and accordingly, I think, if by any means this fatigue could be diminished, without lowering the standard of the Examination, it would be a good thing.

The next point which occurs to me is the circumstance that, owing to the peculiarity of the scheme, —which is a pass-examination for the entire curriculum, each subject having a certain minimum number of marks, and there being similarly a minimum for the aggregate,—if a man does the utmost credit to himself in all but one subject, and loses in that one by scarcely reaching the required minimum of marks, he loses the whole of his labour. He is simply rejected. This, however, is the condition which has been accepted; I will not say whether it is wise or not; but my own impression is the sooner it can be somewhat modified the better.

The next matter I refer to is the circumstance of the examination for Distinction being altogether separate from the examination for Proficiency. The Distinction examination, though it points to other fields of superior accomplishments as permissible, yet substantially takes the same ground as the Proficiency examination. But in order to obtain "distinction," the candidate who we may suppose comes forward for "proficiency" at twenty-one years of age, has to wait till he is twenty-five, and then has to go over the same ground as in the first programme. It seems to me there is considerable difficulty here, and that this is a subject upon which investigation might fairly be made.

[The following clause was referred to in the published programme: "The Institute, therefore, did not encourage any person to offer himself as a candidate in the Class of Distinction under twenty-five years of age."] *

My argument is that practically he has to go over the ground twice; and the consequence, as I think, appears in the fact that up to this time we have only three graduates who have passed in the class of Distinction. On the present occasion we had no Distinction candidate at all.

The next point I would mention (and I hope I may not be supposed to be attempting to pick holes in the scheme, my purpose being only to advance it), is the circumstance that there is at present a total want of connection, as regards the ultimate results of these Examinations, with the Institute; and I may also say, a total want of practical connection with any ultimate advantage in the profession. A man submits himself for examination, and what does he get? He gets a certain certificate, but he obtains no further recognition here. We look upon ourselves as the guild of architecture; and it is some sort of association with this guild which I think would be the most valuable reward. In the second place, even if the diploma were more complimentary than it is likely to be, I question whether the possessor of it would find he has derived advantage from it amongst the profession at large, to say nothing of either the world of business or society. I hope I may not give offence if I mention this further notion, viz., that I think the recognition which this Institute has given to passed candidates has been of a reluctant and grudging character. There seems to me to have been a want of disposition to encourage and stimulate candidates. At any rate, I know this is the view taken by many, and I

* Under the Rules of the Examination, however, a candidate who passes in the Class of Proficiency at any age may present himself the following year as a candidate in the Class of Distinction. The restriction as to age only applies to those candidates who desire to pass in the higher grade without having previously passed in the first.

think we may be able on reconsideration to see our way to give a less reluctant, and, indeed, a liberal and generous recognition of the merits of those who have acquired credit in these examinations.

Another point which has occurred to me is the difficulty in which provincial candidates are placed. A young man coming from Liverpool or Manchester, or from Scotland or Ireland, has to establish himself in London for at least a fortnight's residence. This we may call something like three weeks' absence from home, at a loss of his earnings and a considerable cost besides, when such expense is almost always an object. Not only so, but he finds himself removed from his customary associations, and even surrounded by novel distractions, while called upon to struggle through a long and laborious examination, of which he is almost sure to have underestimated the severity. Upon this I think I may safely venture to say that if some amelioration of the pressure could be judiciously devised, it would be a great boon.

Another thing which has occurred to me is, that there is a certain complexity about the scheme. I believe this is the general impression of those who came forward as candidates,—that though theoretically and nominally the scheme itself is clear and precise enough, yet when reduced to practice, it is found on various points to fail in this respect and to fall into perplexity and difficulty. More particularly there is an element which I for one must take leave to object to,—that is, there is a severe and somewhat paradoxical element of secresy imported into the working, in a way which surely is quite unnecessary. The result, in my own experience has been, to say the least, needless confusion. The object, of course, looking to the present occasion, could only be to satisfy the young men that Mr. Penrose, Mr. Aitchison, and myself, should not be able to cheat them. But I have no hesitation in saying, the young men had no thought for a moment that we could possibly be so disposed. I dare say they would have had the most perfect confidence in coming before us openly for *viva voce* examination throughout. If therefore such secresy be unnecessary, I think we may say it cannot fail to be a grievous embarrassment. [Professor DONALDSON, begged an explanation of this secresy]. It is so inexplicable that I do not think I could explain it. Indeed, I do not profess to understand it. In the first instance, as I gather, certain symbols are attached to the papers in order to identify them with the individual candidates; then somebody rubs these out and puts in another set of symbols; then somebody else pastes these over and puts on another set; and so it goes on till everything is in its turn obliterated and there seems to be nothing that does not signify something else. Of course all this is done for the most virtuous end, if it were necessary, namely, to prevent the young men from being unfairly treated. At any rate if it be not necessary, then I submit the sooner it is reconsidered the better: if it be still deemed necessary, then keep it up.

No one will be surprised to be told that in any scheme of examination in which these little shortcomings are found to exist, the result will appear in the number of the candidates being small; because every hardship, every embarrassment, every complication, keeps candidates away. You cannot have the scheme too plain, straightforward, and above-board, or too simple in its elements, provided the standard be sufficiently high. But again, no one will be surprized to hear, as the consequence of what I have been describing, that on the contrary the standard has become low. Far be it from me to say that those gentlemen who have passed the present examination do not deserve your warmest approbation and applause; yet I think these young men would tell you themselves, if they could be asked, that if in the course of a little time a step or two in the right direction could be further taken, the result would tend to raise the standard of the whole examination, simply by avoiding those little shortcomings which at present make themselves felt in the working.

The last point I will mention is, that there is an observable absence, in this, as I think, particularly important portion of the Institute's practical operations, of that continuous management, which, under

the general control of the Council, exists with reference to other important subjects, by means of special committees. In the present instance, for example, the Examiners and Moderators are for the moment in charge; but in a very short time they pass out of office, and no one has charge of the matter in any way (except in so far as the general charge of the Council goes) until the next Examination occurs.

This being the last item I have to offer in what I hope you will not call fault-finding, I will now point out to you, merely as suggestions for your general consideration, and not as definite proposals of my own, what I will call certain further steps in the right direction, which may perhaps at the present moment, or shortly, be taken, with a view to the improvement of the scheme which so many of us have at heart.

The first suggestion I will make bears upon the last of the short-comings I have alluded to, viz., the want of a permanent supervision of this part of the Institute's operations. All I have to say on this is, that I am inclined to think it would be a good step to have a special committee in permanent charge of the Examinations, just as we have committees in charge of our other undertakings. We have a committee in charge of questions of Professional Practice; another for the Library; another for Sessional Papers; another for the Conservation of Ancient Monuments; another for the District Surveyorship Examinations; and I think it would simply be an equally good thing to have a similar committtee of a permanent charaeter, placed as soon as possible in charge of the examinations now before us, consisting of gentlemen who have acquired experience as Examiners and Moderators, and others equally qualified incidentally to take charge of the subject.

The next move in the right direction which I will suggest is this. I have spoken of the great fatigue involved in the Examination itself; and I might go on to speak of the great additional, or rather preliminary fatigue which is involved in the preparation for it. There are no less than seven or eight, or properly speaking a dozen or more, separate subjects which have to be read up; namely, besides general design, mathematics, geometry and mensuration, physical science, what is called professional practice, materials, construction and specification, and history and literature. And observe the student has to toe the mark on all these subjects virtually at one moment. He cannot stand an examination on one subject to-day, and read up for another to-morrow; all his preparation must be completed before the examination begins (this is a maxim accepted everywhere); consequently he must be primed and loaded on all these subjects together,—most of them not at all connected with his every-day office work, and others only connected with his school days. Now, looking at the scheme of examination, it is, I think, easily capable of being divided into three classes of subjects. The precise number is a matter of detail on which I do not ask the opinion of the meeting, but one on which the committee will be better able to advise: but what occurs to me is, that one division might be practical art and design, a second general science in the abstract, and a third professional practice in a comprehensive sense. These three, I think, are easily separable fields, and it seems to me it could not possibly do harm, and might do good, if a pass were granted for each of the three separately. The foremost consequence would be, that a man who failed in one would not lose in the others. An additional advantage of this division into parts would be, that we should be able to establish at once a higher standard of examination. A candidate might then pass in one, or in two, of the three subjects in one year, and come up another year and pass in the remainder. By that means, as it seems to me, this double advantage would be gained, —the fatigue of the examination would be lessened, and the standard of examination might at once be advanced. Then again, if it were thought desirable to adopt such a scheme as a means of relief, you would probably be willing to give the certificate or diploma only for passing in all; so as to carry with it this important character—that the person to whom it is given is pronounced efficient for the actual practice of architecture. This is exactly what rising young men want; they want something which shall

say to the world, "This man has been pronounced by authority of his seniors to be qualified to practice architecture in public as his profession."

Then with regard to the subject of honours, I am personally inclined to think that the necessity for a separate examination for "Distinction" does not exist. I think all we desire can be most easily accomplished by the simple means of granting honours to the men who pass more than creditably. For instance, I would not allow any man to pass by half the number of marks, or less, as at present; but when a man has gained perhaps considerably over three-quarters of the number of marks in any class of subjects, I would then give him a certificate for honours for that class, without any further effort or trouble on his part. This, I think, would answer our purpose equally well, and would also ensure the educational purposes of the candidates. Of course, it would still be easy enough to provide for the case of a candidate who, desiring to gain honours, failed at the first endeavour, and therefore offered to come up again. As regards the two points which I have now discussed, I feel that if anything like this scheme could be carried out, it would reduce the fatigue of the mere examination itself by more than half; and I think this would be a great boon to young men who have for the most part to prepare themselves for examination by study after the hours of employment in the office.

Now, I have a crochet of my own with regard to provincial men. I do not see why we could not examine provincial men in the provinces. I need scarcely tell you that some of the young men in the present examination came from a distance:—at any rate there are two from Northampton; and when you look at the list of former successful candidates, you find one from Manchester, one from Gateshead, one from Bristol, one from Sheffield, and one from Belfast. I am myself inclined to think a very large proportion, if not the majority of candidates would be from the country if we relieved them from the necessity of coming up to London to be examined. The list of questions might perhaps be sent down to some local member of the Institute, or other such person, under an arrangement whereby he pledged himself to see carried out certain conditions devised at head quarters; and I for one see no reason why this could not be done easily enough.

I come now to the question of rewards, and on that I will take the risk of repeating that the system of our rewards exhibits a certain reluctance which amounts to discouragement. I think also the sooner we adopt the system of introducing a practical connection of the examinations with the Institute the better. As regards the diploma, the fear has been expressed that such a recognition would enable a man to assume an attitude of self-gratulation which would be inconvenient to others. But why so? I would allow him to blow his own trumpet as much as he pleases; perhaps the more he does so, the better for the cause. As regards the connection with the Institute, I venture to suggest this: that candidates who pass the preliminary examination should be admitted as free students of the Institute, without payment of any fees. That would cost us nothing, and at the same time would be a boon to the young men. I would further suggest that the man who gets a diploma, for success in all sections of the Examination, should have the Associateship of this Institute, as a matter of right, upon the easiest possible terms we can contrive. This would be not merely an encouragement to the young men, but a benefit to the Institute, for we should be honoured by possessing Associates who might be said to have come up for examination for the purpose of obtaining that position.

Then, lastly, I would refer to an old suggestion, that the man who receives honours ought to have a medal in recognition of the Institute's appreciation of the honourable position he has attained; and I think he might perhaps further be entitled as a matter of right to the Fellowship of this Institute—I presume after he has fulfilled his seven years of probationary practice—on easy terms.

Let us remember that the pecuniary concessions I have suggested are such as to cost us little in money, while they may prove to be of infinite value to the cause of professional education. At the

same time, we may also reflect that they are of much more moment to candidates than some of us may profess to think. We must look back to our own young days, when, as the phrase goes, money was an object, and we shall see more clearly, perhaps, how far this condition of early life may be turned to advantage.

I do not say that all these steps can be taken at once, but I think they all point in the right direction. The chief object of the Examination perhaps is to elevate the standard of education as much as we can. I have been reminded by a friend that the standard had been purposely lowered for the first few years; I say, therefore, the sooner we now raise it to what originally was intended the better. Whilst I would raise the standard, I would at the same time as far as possible diminish the labour. These two points are my general issues. There is nothing radical or revolutionary in what I have suggested, nor anything to occasion alarm; and I have in conclusion only to remind you that I have ventured to lay this subject before you this evening, not with a view to your taking the responsibility of acting upon any of my proposals, but only in the hope that an expression of your opinion may be elicited, which, without committing you to anything, must be of great value to the Committee of Examiners and Moderators, who will meet in a week or two to prepare their usual report to the Council on the general subject of the Examination.

Mr. WIGGINTON, Fellow.—I am sorry to hear Professor Kerr speak so despondingly of our being able to obtain a diploma sanctioned by Government, for I know he worked very hard in this matter some years since. I was, in conjunction with him, a member of the first committee appointed to draw up the curriculum, and I regret to find that he has changed his views. I hope before long we shall be able to go to the Government and ask for a diploma; inasmuch as the evil of putting names on brass plates under the style of "Architect" is increasing rather than decreasing, more especially in the provinces.

Mr. JOHN P. SEDDON, Hon. Sec.—I think some of the suggestions of Professor Kerr, especially as to the diminishing of the labour of the examination and spreading it over two years instead of carrying it all out in one, are worthy of consideration. I confess I do not share in the sanguine hopes which the last speaker has expressed on the subject of a diploma under Government sanction, and the feeling of the Institute hitherto has always been against asking for such a thing: at the same time, if it would have the tendency to enhance the value of the certificates we ought to strive for it; but all possible precaution should be taken to prevent certificates being obtained by the system of "cramming." It would be a better test of ability in the various branches of the Examination if the candidates were prepared upon two or three subjects in one year rather than being examined on so many subjects at once.

Mr. PENROSE, Fellow.—I think there is not one of Professor Kerr's suggestions which does not merit consideration, but I feel with respect to most of them justice cannot be done to them after a few minutes' reflection, but that they require to be weighed maturely. There is one point, however, on which I think the feeling of the meeting might be brought to bear, and it would be of great service to the committee of Examiners and Moderators who have to meet again on this subject; and that is with respect to what has been termed the grudging quality of the rewards of these examinations.

Mr. T. ROGER SMITH, Fellow.—Having taken an interest and a humble part in these examinations for some years, I will say a few words on the whole question. At the outset I would say I think we must all feel grateful to Professor Kerr for the way in which he has brought the subject forward, and for the liberal spirit in which he has treated it. The learned Professor has given more credit to the Institute than, I am afraid, it deserves; for he speaks of the certificates which these young

gentlemen are to have; whereas I believe they have not got them, but a resolution has been come to that certificates shall be issued; but that is only a promise. [Professor DONALDSON: They are prepared, and will be issued immediately.] I quite concur with the learned Professor (Kerr) that the reason why we have so few candidates for examination is the absence of that practical connection with the Institute which is in my opinion so desirable. It also appears to me most desirable that there should be the permanent committee which Professor Kerr has suggested, and I should be inclined to move that the Council be requested to nominate such committee to take charge of the subject of Voluntary Examinations. I consider this is a matter of equal importance with those which have at present the benefit of permanent committees, because it is one which eminently requires the attention which such a committee only could bestow upon it. Having said thus much in concurrence with the views of Professor Kerr, I hope I may be excused for saying there are some points of his suggestions on which I do not exactly agree with him. It appears to me undesirable for us readily to alter the character of the examination by dividing it into sections which a man may pass *seriatim*—for this reason. The main object of the Examination is to show that a young man has reached a standard which makes him fairly proficient in the subjects he has studied, and I do not think it much matters which way you look at it—whether he is so proficient as to make him fit for practice, or as a successful student. Taking the broad divisions of the Examination they are these—designs, mathematics, and geometrical drawing, professional practice, physics, materials, construction, and the history and literature of the art. I do not think there is one of those things which a man ought not to have tolerably at his fingers' ends when he commences practice; and when he steps out of student life he should afford indications that he has reached a fair standard in every one of those branches. I think the result of allowing candidates to devote themselves to two or three subjects in an examination and postpone the others till another year would be to lead to more "cramming," and would not be so satisfactory as if they showed themselves to be fairly proficient at one time in the different topics they have to go through. As to the so-called secresy alluded to by Professor Kerr, I do not see much in that, as I think under the present system the separate work of each candidate is better judged of, and each man's work classified according to its merits. In conclusion, I think it is a pity that we have no detailed report from the Examiners and Moderators on this occasion. [Professor KERR: We have not finished yet; we have to meet again to prepare our report.] In the absence of the report it is satisfactory to find that one of the Examiners has taken the trouble to go into the matter in this way. I trust the suggestions which have been thrown out this evening will be well weighed, especially with regard to such a recognition of the examinations on the part of the Institute as will reward the candidates for their efforts. I hope these views will be embraced, and that they will yield good fruit in the future.

Mr. PHENÉ SPIERS, Associate.—We ought to feel grateful to Professor KERR for bringing this subject forward. Generally it has been brought before committees only, and outsiders have no power of knowing what is done, or the reasons which are advanced for adopting propositions which are thought to be beneficial to others not on the committees. The various points which Professor Kerr has brought forward with reference to these examinations were, I believe, brought forward in a different form—though not so boldly—after the examinations held in 1863-64. I was unfortunately away from England then, and since that time certain amendments have been made, some of which one can hardly see the reason for. As to the reduction of the time of examination, it is said that the time at present devoted to the purpose is an inconvenience. However that may be, it is quite certain that no one in three days could go through such a course of examination as that which now obtains. It was felt that the time should be much longer than three days; it was also felt that the number of questions to be answered was too great to enable them to be answered with credit. It was then resolved that the time

of examination should be lengthened from three days to a fortnight, as it stands at present. This great addition to the amount of time expended in the examination changes somewhat however its principle. It is well known that the system, or rather want of system, of English architectural education obliges a young man after office hours to acquire certain information, and to an extent the examination goes to test the student, not in office work, but in work which he has had to do out of the office. It is scarcely possible to expect that clerks and pupils in offices can give more than a week to examination on subjects which they study only of an evening, and I believe if the time of examination were shortened to that period it would bring a larger number of candidates. With regard to the alleged reluctant recognition which the Institute has given to these examinations, as one who presented himself at the first examination, I would say I believe the recognition has been poor and stingy in the extreme,—not that it much matters, or that the examination is held to be of any great importance out of doors; but I think the Institute ought to have been prepared to give greater publicity to the names of the successful candidates; and let it be known that a certain number have thought the Examination set forth by the Institute was worthy of spending a large quantity of time upon. I may say the only occasion on which the examination was of value to me personally it was entirely lost. There was published some time since a Directory of the Architects of England and of the trades connected with architecture. At the beginning of that book there was a list of names of some of those who had passed the examination of the Institute; I think care should have been taken to see that *all* those persons who took the trouble to pass the examination were given in the list, whereas to my own knowledge two persons who passed for distinction were left out. This I repeat was the only instance in which value could be attached to the examination as regards myself personally, and as I have said, that was lost to me.

Mr. EASTLAKE.—I believe I am correct in stating that no application was made to the Institute, by the compiler of the Directory referred to, for a list of candidates who had passed the examinations. A list of members was asked for and supplied.

Mr. SPIERS.—Then with regard to the "secresy," if what Mr. Roger Smith states is correct, I should advise the students of the Association to falsify their handwriting each time they go into the examination.

Professor DONALDSON (interposing).—I really must say the spirit in which this discussion should be conducted ought to be at least with due respect to the feelings of the Institute and of the gentlemen who render it a very valuable service by giving up a great deal of time to these examinations without any remuneration. I really can only regard these as captious objections to the way in which those gentlemen have discharged their duties.

Mr. SPIERS.—I wish to speak with all respect, and I have always advocated the examinations in the Association downstairs, and have always said the Institute is worthy of all praise, but on an occasion like this it is right to mention those points on which I have heard a great deal of grumbling amongst students. I am connected with the students a great deal, and I know their feelings, and I bring these matters forward to assist the students rather than as complaining personally of what has been done.

Professor DONALDSON.—There can be no objection to your bringing forward any suggestions; I only speak of the spirit in which the observations appear to be dictated. It is quite open to any one to advocate the cause of the students without wounding the feelings of others.

Mr. SPIERS.—I think there would be great advantage in dividing the subjects of examination as Professor Kerr suggests, inasmuch as it would enable the standard to be raised. Mr. Roger Smith says young men should be ready upon these matters without much preparatory study. That I think is a theoretical view. Mr. Smith objects to the division of subjects on the ground that it would encourage

cramming. I think that could be avoided by a proper subdivision of the subjects. Professor Kerr did not say under what heads he classed the subjects. Supposing they were divided into three classes—viz., 1st, design; no cramming is necessary for designing. 2nd, physics and mathematics; every one must cram more or less for these subjects. There must always be cramming when Euclid and algebra and formulæ are brought before you. 3rd, Materials and Construction, and to these latter the same remark applies as to design. You may cram for Materials as you are obliged to do now. I think one of the most valuable suggestions of Professor Kerr is that which relates to the more intimate connection of the Institute with these examinations; and if the Institute is to take the stand it ought, it will more intimately attach itself to these examinations than it has hitherto done. There was a proposition made last year with reference to that, and it was suggested that no student should be admitted a member of the Institute who had not passed examination. That was felt by the students to be a right thing; but it was thrown out by the Committee without a word of explanation. That is the point to which we are tending now, and I am sure it is the wish of the students downstairs that the examinations should form an intimate portion of the operations of the Institute.

Mr. E. NASH, Fellow.—I beg to rise to second the proposition of Mr. Roger Smith for the appointment of a permanent committee to take charge of the examinations. [Professor DONALDSON.—It cannot be done here. It can go from the meeting as a recommendation to the Council.] I shall be happy to second the proposition in that form—that it be a recommendation to the Council to nominate a special committee to take charge of the examinations. I am myself grateful to Professor Kerr or anybody else who will do anything towards the improvement of the examinations. It is a subject I have always taken great interest in, even before I joined this Institute at all. I kept aloof from it for some time because I thought it was better that a man should come into it through some merit of his own, rather than he should join it simply because he is an architect; and I abstained from joining it for many years because there was no test. I think one of the reasons why these examinations have not succeeded in getting into such favour as might have been expected is that many have thought it an almost useless proceeding. It is pretty well known that I have never held that view myself, and I am glad to see that the number of those who are of my way of thinking on this point, is increasing. At the same time I may say that no examination can be a test of a man being a man of mettle, and there is no test which can be applied to finding out that. Examination will never test whether a man is fully competent to practise in the profession of architecture in its highest and fullest degree. Nevertheless it must be a benefit to the Institute and the profession that some test should be given to show that a man possesses the qualifications of an intellectual man and the skill of an artist; and I am sure we must not only be grateful to the Institute for having established the examination, but particularly grateful to those young men who come up to go through that severe ordeal. The condition of things alluded to in Dickens's works with regard to Architects is, I am happy to say, going out in part, and if these examinations are so successful as to make it known to the public that those who belong to the Institute are men of education and talent, it would be a benefit to the whole body. Talent has multiplied at least twentyfold beyond what it was, and there are plenty of men who will take advantage of these examinations for bringing it out; whereas in my young days I had to get up the little knowledge I possess by my own hard labour, without any assistance of this kind. The committee which I support the appointment of is the only method by which the details of the examination scheme can be properly considered, and it is with great pleasure that I second the recommendation that such a committee be appointed for that purpose.

Mr. C. FOWLER, Fellow.—Having taken an interest from the first in this matter, I cannot refrain from making a few remarks. And first as to the committee that has been suggested. I was

under the impression that such a committee already existed, although they may have had little to do, seeing that the examinations have not regularly taken place. [Mr. EASTLAKE.—There has been no permanent committee.] I think this is the first examination that has been held for several years, and to a certain extent the matter comes fresh before the Council and the Institute. I agree with Professor Kerr on the proposition for this committee, and I join with those who have preceded me in thanking him for bringing this subject before the meeting to-night, though with some of his points I do not agree. As to the fatiguing character of the examination, on which Professor Kerr has laid so much stress, I cannot help thinking Mr. Spiers rather represents the feelings of the candidates, coming up as he did on the first examination, and I agree with him that a short period of examination, endeavouring to compress an enormous amount of work into a very small space of time, must be a greater strain on the mind than when more time is afforded for going over the same ground. Not having been immediately connected with the examinations, I was not aware that they occupied so much time as is stated; but five or six days appears to me the least that could be occupied, and perhaps six or seven would be better. [Mr. SEDDON.—It amounts to six days at present, viz. four whole days and four half days.] I think that is not too long for the work to be done; and that it would be a greater strain upon the candidates to compress the same amount of work into four days. As to the granting of certificates, you will remember from the first the difficulty there has been to bring this matter to bear at all, and it was upon this ground—this Institute, though having a Royal charter, is not recognized as any standard body of the profession with regard to the public. It certainly represents the profession in a certain way, but it has no means of control over the profession at large whatever. It is simply a private society for mutual instruction and information, and as such it is extremely difficult to deal with this subject; consequently, the senior members of this Society felt some difficulty in dealing with it. I can understand they might think, by giving diplomas, as it was proposed to call them, to the young men who passed, it might be placing them on a par with men of greater experience than themselves, and the public would have some difficulty in distinguishing between the two. I mention that to show why the Institute may have appeared to be niggard in the recognition of these examinations. I do not for a moment justify it. I think the object of the examinations should be to grant diplomas or certificates of competency to practice as an architect, and if they could be made of any legal value so much the better; but I apprehend so long as they are granted by the senior branch of the profession they will have a certain value, though no legal value. As to dividing the subjects it does not appear to me desirable, and my opinion upon that is formed rather by analogy of examinations in other cases, than from any views of my own. One objection is, that a young man who comes up for one examination with the intention of passing the other afterwards, might be prevented from doing so, and his labour to a certain extent would be thrown away. [Professor KERR.—There are two or three examinations in the medical profession.] There is but one pass examination, though there may be several examinations. The examinations, if separate, lead up to one end. I confess Professor Kerr's statement as to the difference between "proficiency" and "distinction" is new to me, and if he is correct in that I have been under a misapprehension. I thought "distinction" in examination was merely the carrying further the examination for "proficiency." It is quite true it is laid down that no student shall present himself for examination for "distinction" before a certain age. That no doubt is a wise regulation to prevent a student coming up unprepared. It is thought that before the age stated he will not have been able to study sufficiently to pass in "distinction;" but it is not necessary, I believe, that he should previously have passed in "proficiency." If he chooses to wait till the time laid down he may come up for examination simply in "distinction." With respect to the point of a more intimate connection of the Institute with the examinations, that is perhaps the most difficult to deal with. The ultimate view is

no doubt the correct one; but even the intermediate step just taken I doubt. I do not hold with the view that there should be rewards for these examinations. The reward should be the certificate, and the real work which a man must go through in order to pass the examination. That will be its own reward. It is so in the Universities. There is no substantial reward to a person taking a degree. [Professor KERR.—Fellowships.] The certificate of this Institute, showing a man's proficiency in his profession, is a more substantial thing in my mind than anything that is got at the Universities. With regard to provincial examinations for the convenience of country students—looking at the experience of such examinations elsewhere I do not think it is desirable to urge that point. As to the standard of examination, I am surprised to hear the Professor state he is dissatisfied with it. It was intended to be raised by degrees in order not to frighten young men at first, and I thought it had by this time reached the normal standard. As to recognition by medals I do not think any substantial recognition of that kind should be made.

Professor DONALDSON.—With respect to the suggestion of premiums to the successful candidates, and that the fact of passing the examination should entitle them after a certain period to the Fellowship of the Institute, we may look forward to the period when all architects will submit to these examinations, and when you have all free members where are the subscriptions to come from for carrying on the business of the Institute.

The CHAIRMAN.—As I understand, the motion before the meeting is, that it be a recommendation to the Council to nominate a permanent committee on the subject of the Examinations. If other gentlemen wish to continue the discussion further, looking at the lateness of the hour, I would suggest the propriety of an adjournment.

Mr. CHARLES BARRY.—I would beg to ask the mover and seconder of the proposition what are to be the powers and functions of this committee, whether they are to be at liberty to conduct the examinations with such modifications as occur to them from time to time, and also whether those functions are to embrace the subjects which have been brought foward to-night, or whether it is to be merely a committee for conducting the examinations under the existing regulations?

Professor KERR.—There is a committee at present in operation, constituted by the Examiners and Moderators, whose duty it is to make a report upon any questions of this kind. What I suggest is, that apart from that, there should be a permanent Examination Committee to control the Examination under the instructions of the Council.

Mr. BARRY.—Is it the notion that the committee now suggested is to be asked to make an exhaustive report upon the matters ventilated this evening?

Mr. SEDDON.—For my own part I can hardly see what are to be the functions of such a committee. The Council is as it were a committee to watch over the questions which arise. If you have a committee to consider broadly these suggestions, and report to the Council upon them, there might be some use in it; but to appoint a permanent committee while the Council holds its present functions seems to me to be useless.

Mr. J. A. HISCOCKS.—We have heard of late the discussions that have taken place in the House of Commons upon the position of architects, and we are much indebted to our late President Sir W. Tite for the manner in which he stood forward in our behalf, and vindicated the position of the Institute of British Architects. Some hon. members chose to style us as a mere trade union. If so, what is the use of all your scientific discussions while the outside public only look upon you as a number of gentlemen banded together for professional purposes. We want some means whereby the position of the Institute may be elevated in the public estimation. We have no legal license to grant diplomas; it would be something if we could obtain that. A chimney sweeper may call himself an architect if he

pleases to do so, and a carpenter may take up the dividers and say "I am an architect." We want to get rid of the sarcasms that have been passed upon the Institute—that you are a mere trade union. Let something be done to alter that impression. Let your examinations be as severe as you please, we shall always have young men ready to come up to them, and who will pass examinations with which old Vitruvius himself would be satisfied.

Professor KERR.—I would remind the meeting that the committee of Examiners and Moderators is still acting, and I apprehend it will be their duty to consider the suggestions that I have ventured to make before you to-night in preference to reserving them for the Committee only. If this Committee see fit to recommend the appointment of a permanent committee, probably that will satisfy the mover and seconder of the proposition before the meeting.

Mr. T. ROGER SMITH.—My strong conviction is that the Council is not the proper body to watch over from year to year a subject so full of details. I gather from Mr. Seddon's remarks that the Council do not intend to support this proposition. I have no wish to divide the meeting upon it.

Professor DONALDSON.—I see no reason why the Council should not support it. It seems to me desirable that this matter should be referred by the Council to the Committee of Examiners and Moderators to consider and report whether any improvements can be made in the scheme of examination, and also with reference to reward for "distinction."

Mr. T. ROGER SMITH.—That will be satisfactory to me.

Mr. FOWLER.—I hope the original motion will not be altogether withdrawn. I think there should be a body to supervise and take charge of the whole subject of the Architectural Examinations. It is quite clear the Council, with its multifarious duties, cannot undertake the task.

Professor DONALDSON.—They do not. It is referred to the Examiners and Moderators to conduct the whole thing; they are completely uncontrolled by the Council in any way whatever.

Mr. T. ROGER SMITH having withdrawn his motion, it was ultimately agreed that the Committee of Examiners and Moderators should be requested by the Council to consider whether any and what improvements could be introduced into the scheme of examination, and also on the subject of reward to those candidates who pass in the class of "distinction."

On the motion of Mr. SPIERS, a vote of thanks was passed to Professor Kerr for having brought this subject forward.

The CHAIRMAN.—I would just say that Professor Kerr is fortunately one of the Examiners, and therefore is in the best possible position to take his share in the matter. In reply to what fell from Mr. Spiers, I would say that the Directory to which he alluded was published by Messrs. Wyman as a speculation of their own, and the Institute had nothing to do with it in any way whatever. I may add moreover, that its issue has since been stopped by an injunction obtained by Mr. Kelly, the proprietor of the Post Office Directory, and the scheme has fallen to the ground.

Mr. SPIERS.—I merely referred to the circumstance for the purpose of showing that the only occasion on which the examinations could be of value had been lost to us. I hope in future some other means will be taken to give publicity to the names of those who passed the examinations.

Mr. SEDDON.—They are published at the time in the professional and other newspapers.

The CHAIRMAN announced the termination of the Session, and the meeting adjourned.

N.B.—The subject of the Voluntary Architectural Examination has since been referred by the Council to the Committee of Examiners and Moderators, who have prepared a Report thereon, which will be considered by the Council after the Recess.

CHIMNEY PIECES, GRATES, FENDERS, etc., *en-suite.*

THE BRITISH & FOREIGN MARBLE GALLERIES,

WARWICK HOUSE, 142 & 144, REGENT STREET,

Offer every facility for the selection of the above from a Stock of great extent and variety, every Chimney Piece having an appropriate Stove, Tile Hearth, and Fender fitted as for use for the Bed Room, the Boudoir, the Library, the Dining Room, or the Drawing Room.

W. H. BURKE & CO., PROPRIETORS.

Manufactories—17, NEWMAN STREET, OXFORD STREET, LONDON; and RANCE, BELGIUM.

A LARGE STOCK OF EVERY VARIETY OF MARBLE IN BLOCKS AND SLABS

BEING ALWAYS ON HAND.

W. H. BURKE & Co. are prepared to give Estimates for Architectural Work, however elaborate, in Granite, Marble or Stone at a short notice, and having great facilities at their London and Continental Works guarantee despatch and punctuality.

WALTER MACFARLANE & CO.

ARCHITECTURAL, SANITARY, & ARTISTIC IRONFOUNDERS,

SARACEN FOUNDRY, GLASGOW;

No. 84, Upper Thames Street; and Saracen Wharf, E.C. London,

Have removed from 38, Bedford Street, to the above extensive Premises (adjoining Cannon Street Railway Terminus), where a large Stock of their various Manufactures are constantly on hand. Combined with the Warehouse are commodious Show Rooms.

PATENTEES AND MANUFACTURERS OF

Plain and Ornamental Rain-water Pipes, Gutters, Ridge Plates, Cresting, Terminals, Railing, Balconies, Verandahs, Ornamental Sign Letters, and Artistic Castings generally;

also Public Sanitary Appliances in Cast-iron, embracing Urinals, Closets, Wash-hand Basins, Baths, School Standards, &c.

LONDON PREMISES:—

SHOW-ROOMS,	WAREHOUSE.	RIVER-SIDE PREMISES
84, Upper Thames Street.	**4, Cousin Lane.**	**Saracen Wharf.**

J. L. BACON & CO., IMPROVED HOT WATER APPARATUS,

FOR WARMING AND VENTILATING

Private Houses, Churches, Schools, Hospitals, Manufactories, Greenhouses, &c.

THE SILVER MEDAL AT STETTIN, 1865.

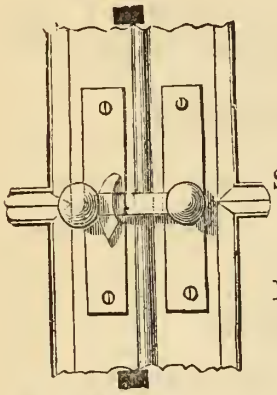
FARRINGDON ROAD, LONDON, E.C., ONE DOOR FROM RAY STREET.

ARCHD SMITH'S PATENT DOOR SPRINGS.

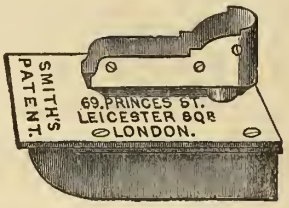
ESTABLISHED UPWARDS OF A CENTURY.

Approved by all the leading ARCHITECTS and used in the principal GOVERNMENT OFFICES, BANKS, RAILWAY STATIONS, &c. in England and on the Continent.

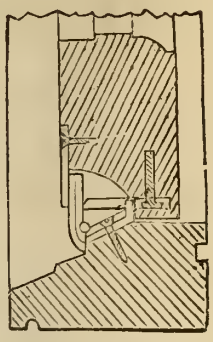
Architects are respectfully solicited to insert the Address in their Specifications.



SMITH'S PATENT WEATHERTIGHT FASTENING FOR CASEMENT WINDOWS.



SMITH'S PATENT SILL OR WATER BAR, FOR CASEMENT WINDOWS ARE SIMPLE & EFFECTIVE

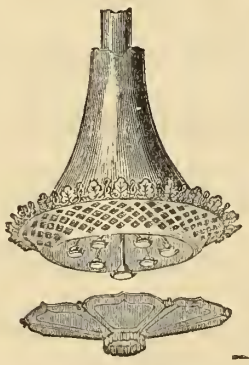


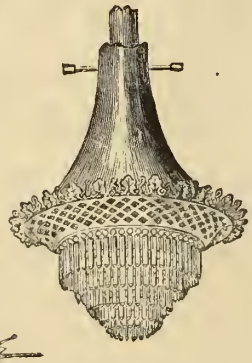
☞ **Address: 69, PRINCES STREET, LEICESTER SQUARE, LONDON, W.**

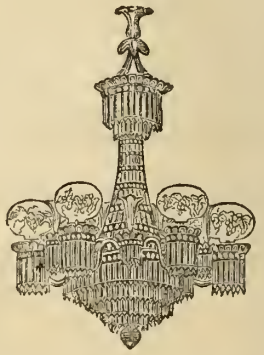
D. HULETT & CO., 55 & 56, HIGH HOLBORN,

Manufacturers of Gasaliers in Crystal Glass, Or-molu or Bronze,

IMPROVED SUN BURNERS.







BRASS WORK OF EVERY DESCRIPTION CAREFULLY EXECUTED

On the Premises, to Architects' own Designs, and may be inspected during progress.

COX & SON, Church Furniture Manufacturers, 28 & 29, Southampton Street, STRAND.

Painted & Stained Glass Works, 43 & 44, Maiden Lane (adjoining Southampton Street,) W.C.

Wood and Stone Carving, Gothic Metal and Monumental Works, Belvedere Road, Lambeth S.

CARVING.—A great reduction effected by roughing out the work by machinery, and finishing only by hand labour.

GOTHIC JOINERS' WORK AND FURNITURE.

GOTHIC METAL WORK, of every description, both in Silver, Brass and Iron.

ESTIMATES FURNISHED TO THE CLERGY, ARCHITECTS, AND THE TRADE, FOR CARRYING OUT ANY DESIGN.

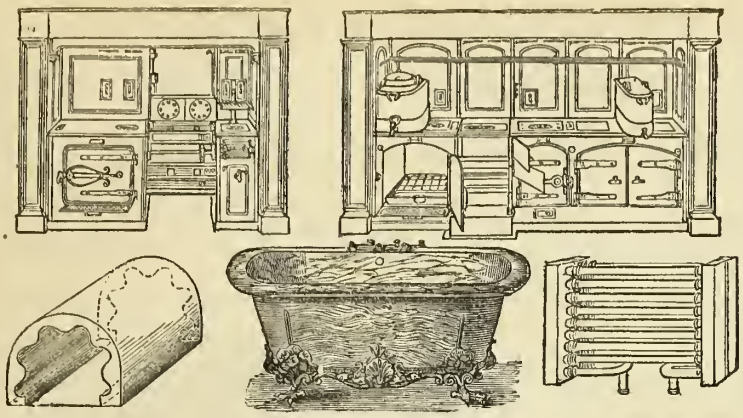
THE WHOLE OF THE WORK DONE ON THE PREMISES.

Cox & Son's Illustrated Catalogue, with several hundred new designs of Church Furniture, Painted Glass, Decorations, Embroidery, Hangings, &c. forwarded for Six Stamps.

Cox & Son's Catalogue of Monuments, Tombs, Tomb Rails, and Memorial Brasses, forwarded for Six Stamps.

Cox & Son's Catalogue of Stained Glass (for Particulars see outside of Wrapper) forwarded for Six Stamps.

SHOW ROOMS, 28 & 29, SOUTHAMPTON STREET, STRAND, LONDON, W.C.



H. WATTS,

Hot Water Apparatus Manufacturer,

1, WATER STREET,

NEW BRIDGE STREET, BLACKFRIARS, E.C.

And 70, ST. JOHN STREET, WEST SMITHFIELD,

BATHS & KITCHEN APPARATUS FIXED,

ON THE MOST IMPROVED PRINCIPLE.

Every description of HORTICULTURAL, PUBLIC and PRIVATE BUILDINGS HEATED by Hot Water.

Improved Open and Close Fire Kitchen Ranges,

Estimates forwarded on application.

ENGERT & ROLFE,

London Felt Works,

UPPER BARCHESTER STREET, POPLAR NEW TOWN, LONDON, E.

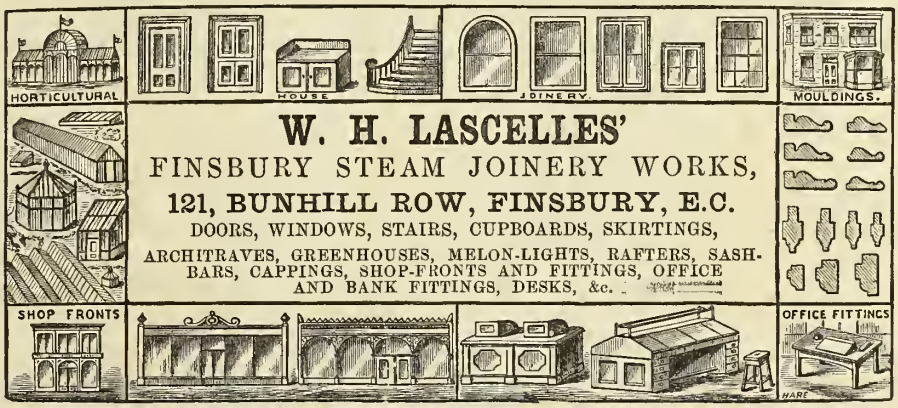
MANUFACTURERS OF

1d. per Square Foot. {**ASPHALTED ROOFING FELT** / **INODOROUS BITUMEN FELT**} **1d. per Square Foot.**

HAIR FELT FOR COVERING STEAM BOILERS, PIPES, &c., in long lengths, 3 feet wide, or in Sheets, 34 by 20 inches.

FIBROUS ASPHALTE, for Foundation Walls to prevent Damp from rising.

Estimates given for any description of Woodwork made by Steam Machinery.



W. H. LASCELLES'

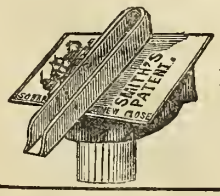
FINSBURY STEAM JOINERY WORKS,

121, BUNHILL ROW, FINSBURY, E.C.

DOORS, WINDOWS, STAIRS, CUPBOARDS, SKIRTINGS,

ARCHITRAVES, GREENHOUSES, MELON-LIGHTS, RAFTERS, SASH-BARS, CAPPINGS, SHOP-FRONTS AND FITTINGS, OFFICE AND BANK FITTINGS, DESKS, &c.

W. H. L.'s Joiner's Price-Book, containing 58 pages, and a Book of 100 Mouldings, sent by Post for 6 Stamps.



THE ORIGINAL SMITH'S PATENT DOOR SPRING,

Pronounced by Government Inspectors and the late I. K. Brunel, Esq., C.E. to be the best, and used at the Universal Exhibition, Paris, 1867.

SMITH & TURNER, 50, BARTHOLOMEW CLOSE, LONDON.

S. GERISH & Co.,

Patentees and Original Manufacturers OF THE

HARDENED JOINT GATE HINGES and of the DOUBLE AND SINGLE ACTION SPRING HINGES, &c.,

22 to 30, BUTTESLAND STREET, EAST ROAD, CITY ROAD, LONDON, N.

LIZARD SERPENTINE COMPANY (Limited).

THE COMPANY'S OFFICES AND SHOW ROOMS ARE REMOVED TO

9, GARRICK STREET, COVENT GARDEN, W.C.

Where a large Stock of Architectural Works are to be seen, in every variety of the beautiful Colours obtainable in Serpentine.

ESTIMATES AND SAMPLES FORWARDED ON APPLICATION.

F. W. WILSON (Secretary.)

JOHN MARRIOTT BLASHFIELD,

STAMFORD, LINCOLNSHIRE,

Manufacturer of Terra Cotta and Architectural Pottery,

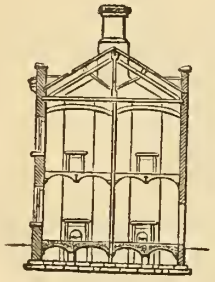
CORNICES, STRING COURSES, JAMBS, MULLIONS, TRACERY, PANELS, RELIEVI, CAPITALS, STATUES, VASES, BUSTS, PEDESTALS, FOUNTAINS, BASINS, TAZZE, PAVEMENTS, &c. WARRANTED TO STAND FROST.

The above can be produced in various colours, viz.—White, Black, Buff of all shades from Gold colour to nearly Brown, a light neutral Tint or Grey, Blue, Green, and any tint of Red from the palest to the deepest.

All Mouldings can be rubbed true before burning, leaving a surface similar to finely ground stone. By this process Cornices, Mullions, Strings, &c. are brought to accurate and even surfaces, and the warping frequently complained of in Terra Cotta work avoided.

If Terra Cotta is composed of such materials as will flux or run together in burning at a very high temperature, a body equal to porcelain in hardness may be obtained, and which will resist acids and alkalies as perfectly as a vessel made for chemical operations.

Among the more important Works recently executed in Terra Cotta may be mentioned—The Duke of Cornwall Hotel, Plymouth; the Terraces, Park Gate Piers, Fountains, Vases, and Statues at Castle Ashby; Holy Trinity Church, Barking Road; Sun Fire Office, Charing Cross; and the whole of the Cornices, Strings, Pinnacles, Window Dressings, Doorways, &c., Dulwich New College.



THE DENNETT ARCH,

Allowed to be the Cheapest Fireproof Construction known, and used with the greatest success for the last twelve years by G. G. Scott, Esq., and other experienced Architects at the New Foreign Offices and other public and private buildings in nearly every county in England, Ireland, and Scotland, North America, and the East and West Indies; used in any form of arch, groin or dome; turned to any length, width, or height; forming a perfect floor and ceiling in one mass, from 2½ in. in the crown to any required thickness. Address to the Patentees, England and Canada,

ROBT DENNETT & CO.,

3, CRAVEN STREET, STRAND; and STATION STREET, NOTTINGHAM.

TESTIMONIAL.—"I have made use of Messrs. Dennett and Co.'s material for Fireproof Arching, and though I have, happily, had no practical experience of its efficiency as against fire, I can bear witness to its strength and its extreme convenience of application. I have made use of it in positions in which I should have found it difficult to introduce any other fireproof material; and it has this advantage, that the arches constructed of it are so entirely in one mass, that they cover the space like a compact shell or inverted basin, and are consequently almost wholly free from lateral pressure."—GEO. GILBERT SCOTT, 20, Spring-gardens, London.

MR. T. H. HARTLEY'S

WESTMINSTER MARBLE WORKS.

MARBLE WORK EXECUTED BY PATENT MACHINERY.

Show Rooms—1, EARL STREET and ESHER STREET, WESTMINSTER

West End Depot—4, REGENT STREET, WATERLOO PLACE, S.W.

C. GOODYEAR, GRANITE MERCHANT,

Is prepared to Supply from his Works known as

THE DE LANK GRANITE QUARRIES

STONES of a SUPERIOR QUALITY for Engineering and general Building Purposes. Granite from the above Quarries is being extensively used in some of the largest engineering works now in the course of construction.

Offices: Country—FORE STREET, BODMIN, CORNWALL; London—19, NORTHUMBERLAND STREET, STRAND.

PRIZE MEDAL, Paris, 1867. The only Medal awarded.

STEPHENS' STAINS FOR WOOD,

These Stains have been used for the MAISONS OUVRIERS, erected by the Emperor of the French, in Paris, last year.

STEPHENS' STAINS FOR WOOD, as a substitute for Paint to resemble OAK, MAHOGANY, ROSEWOOD, WALNUT & SATINWOOD. These preparations exhibit to great advantage the Natural Grain, so that the cheapest descriptions of wood, when stained, sized, and varnished far surpass paint in appearance.

Prospectuses and small Pieces of common Deal stained (as Specimens) forwarded free by post.

Manufactured and Sold by HENRY STEPHENS, 171, ALDERSGATE STREET, London, E.C.

(Late 18, ST. MARTIN'S LE GRAND.)

THE ARCHITECTS' BENEVOLENT SOCIETY.

PATRONS.

A. J. B. BERESFORD HOPE, ESQ.

PRESIDENT—SYDNEY SMIRKE, ESQ. R.A.

TRUSTEES.

PHILIP HARDWICK, ESQ. R.A. | T. L. DONALDSON, ESQ. Member of the Institute of France. | GEO. GILBERT SCOTT, ESQ. R.A.

TREASURER—WILLIAM TITE, ESQ., M.P, F.R.S.

Information relative to the Society may be obtained of the Collector, Mr. ALFRED HILL, Bancroft Hospital, Mile End Road; or of JOHN TURNER, Hon. Secretary, 15A, Wilton Street, Grosvenor Place.

FORM OF BEQUEST.—I give unto the Treasurer (for the time being) of the Architects' Benevolent Society the sum of £ for the benefit of the said Society, the same to be paid out of that part of my personal estate which by law may be effectually given to such purpose.

PRIZE MEDALS.

London, 1851.

London, 1862.

Two Medals.

Paris, 1867. Silver.

MARK H. BLANCHARD & CO.

(Successors to COADES,)

ORIGINAL WORKS ESTABLISHED 1769.

TERRA COTTA MANUFACTURERS TO HER MAJESTY,

The Commissioners of 1851, the Board of Works, the Trinity House, the Admiralty, the Royal Horticultural Society, and the Department of Science and Art, South Kensington; and the Recipients of the PRIZE MEDAL at the 1851 Exhibition for MATERIAL and Workmanship in TERRA COTTA, and the only Recipients of Two PRIZE MEDALS at the 1862 Exhibition for TERRA COTTA and POTTERY,

Have the honour to inform the Nobility, Gentry, Architects, and others, that they can be supplied from the above Works with every article in this imperishable and invaluable Material in Sculptural and Architectural Embellishments, suitable to the Palace, Mansion, or Cottage, which will be found to be unequalled in price, quality, and durability, and the Works of this Establishment have stood the test of time.

A beautiful variety of Statues, Statuettes, Vases, Tazzæ, Fountains, Flower Pots, Balustrade Terminals, and other adornments, suitable for the Conservatory, Flower Garden, and Grounds, at prices unprecedented. ESTIMATES FURNISHED.

An Illustrated Priced Catalogue will be forwarded upon the receipt of Eight Postage Stamps.

We may mention some of the Works recently executed by us, and now in hand:—The Terra Cotta Work to the Permanent Buildings, South Kensington Museum; Charing Cross and Langham Hotels, and Star and Garter, Richmond; the New Mansions, Grosvenor Gardens, Pimlico; the Cannon Street Hotel and Terminus, City; the Wedgwood Institute, Burslem, Staffordshire; and the Grand Hotel, Cairo, Egypt.

TERRA COTTA WORKS, BLACKFRIARS ROAD, LONDON, S.

THE VERDICT OF THE PUBLIC.

HURN'S

PATENT LEATHER LINE FOR VENETIAN AND ROLLER

BLINDS, SASHES, SHUTTERS,

PICTURES, AND GENERAL PURPOSES.

WORKS ADMIRABLY, AND LASTS FOR YEARS.

Inventors, Patentees and Manufacturers.

17, WORMWOOD STREET, BISHOPSGATE WITHIN, LONDON.

MODELLING, ORNAMENTAL PLASTERING & STONE CARVING.

JAMES MABEY

Solicits the attention of Architects and others to his Stock of New Designs for Internal and External Plaster or Cement Decoration for Buildings.

Figure and Architectural Modelling and Wood Carving executed to order, and Designs made for any work.

1, 1A, & 2, PRINCES STREET, STOREY'S GATE, WESTMINSTER. S.W.

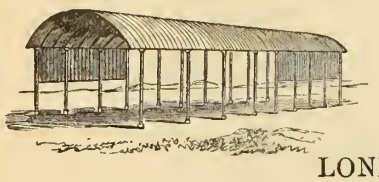
BATH STONE OF BEST QUALITY,

RANDELL & SAUNDERS, Quarrymen and Stone Merchants, BATH.

LIST OF PRICES at the Quarries and Depôts, also Cost for Transit to any part of the United Kingdom, furnished on application to

BATH STONE OFFICE, CORSHAM, WILTS.

TUPPER & CO.'s GALVANIZED CORRUGATED IRON.



IRON BUILDINGS, IRON ROOFS, & IRON CHURCHES

Erected in any part of the Kingdom.

ILLUSTRATED CATALOGUES POST FREE.

Works—BIRMINGHAM and LIMEHOUSE

Every description of Iron Work Galvanized.

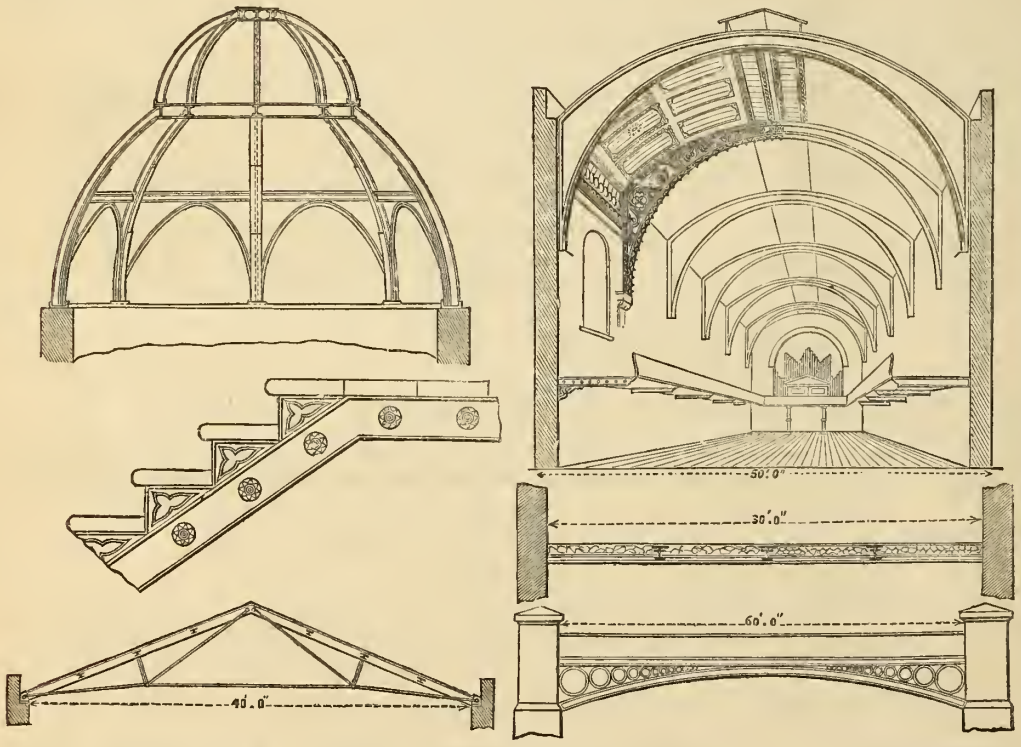
LONDON OFFICE—61A, MOORGATE STREET, E.C.

PHILLIPS'S PATENT SOLID FLANGE GIRDERS,

Give double the strength of ordinary Riveted Plate Girders of corresponding sectional area and weight, and are supplied in the usual sections at a lower rate per ton.

PHILLIPS'S PATENT IMPROVED FIRE-PROOF FLOORING

Dispenses with the use of all Wooden Fillets and Laths; can be laid by any labourer, and the ceiling plastered immediately; is light and indestructible, and, in combination with the Iron Joists, forms a perfect structure at a trifling cost over the ordinary combustible Timber Floors.



"From some experiments which took place in London, on Tuesday, at The Grove, Southwark, with Mr. Kircaldy's Testing Machine, it would seem that we are on the eve of a complete revolution in the strength and in the economy both of material and manufacture of rolled iron girders, and that since the days of Mr. Fairbairn's celebrated girder of 1846, there has been nothing so important to its purpose as the invention we are about to describe in the building department of the constructive arts; whether applied to houses, bridges, or ships, it would be almost impossible to overestimate the gravity of the new discovery."—*Ryland's Iron Trade Circular.*

"It is useless to attempt to understand the properties of these girders on any ordinary hypothesis. The real explanation probably lies in the fact that the web plate, usually considered as not contributing to the strength of the riveted plate girders by reason of the attachment to the flanges being merely mechanical, actually enters into the work of the patent girder, united as it is to the flanges by the superior attachment of the natural cohesion of the metal. Taking, then, the web of these girders as forming an important element in their ultimate resistance, we are able to understand and accept as probable what would otherwise appear extraordinary."—*Builder.*

W. & T. PHILLIPS, 29 & 30, COAL EXCHANGE, E.C.

GEO. M. HAMMER,

MANUFACTURER OF

SCHOOL DESKS AND FORMS,

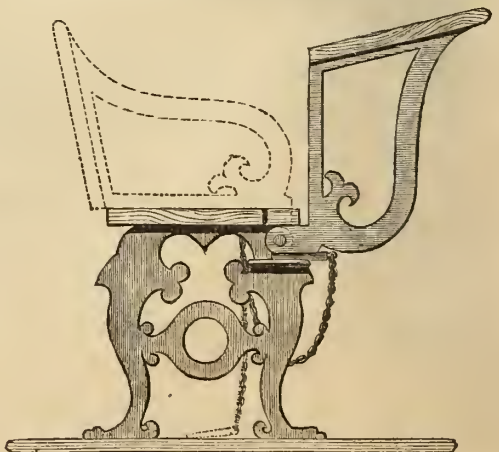
LECTURE HALL SEATS, &c.

ESTIMATES GIVEN FOR FURNISHING SCHOOLS IN TOWN OR COUNTRY.

Priced Pattern Sheet on application.

ARCHITECTS' DESIGNS CAREFULLY EXECUTED.

108, St. Martin's Lane, Charing Cross, London, W.C.



THE "OSBORNE DESK AND SEAT"

S. OWENS & CO.

(Late CLINTON and OWENS)

HYDRAULIC AND GENERAL ENGINEERS,

WHITEFRIARS IRON WORKS,

WHITEFRIARS STREET, FLEET STREET,

LONDON.

S. O & CO. beg to inform Architects and others that they execute the under-mentioned Works for which they are prepared to Estimate, on receipt of the necessary particulars, or they will send an experienced person to any part of the Country to take levels, dimensions, &c. for such Works.

Pumps for Deep and Shallow Wells, to be worked by **Hand, Horse, Steam, Water or Wind Power.**

The Improved Self-acting Hydraulic Ram, for raising Water from Rivers, Streams, Springs, &c., from which a fall of a few feet can be obtained.

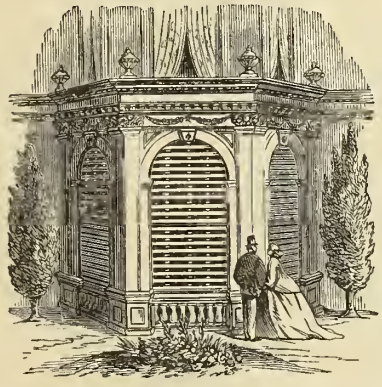
Water Wheels, Turbines, Steam and Wind Engines, for Driving Farm Machinery, &c.

Fire & Liquid Manure Mains, Hydrants, Hose, Piping, Fire Engines, &c.

Warming Apparatus, for Conservatories, Hot-Houses, Halls, Public Buildings, &c.

Hydraulic Lifts, Gas Works, Drying Closets, and all other Apparatns for Gentlemen's Mansions, Public Establishments, &c.

ILLUSTRATED CATALOGUES ON APPLICATION.



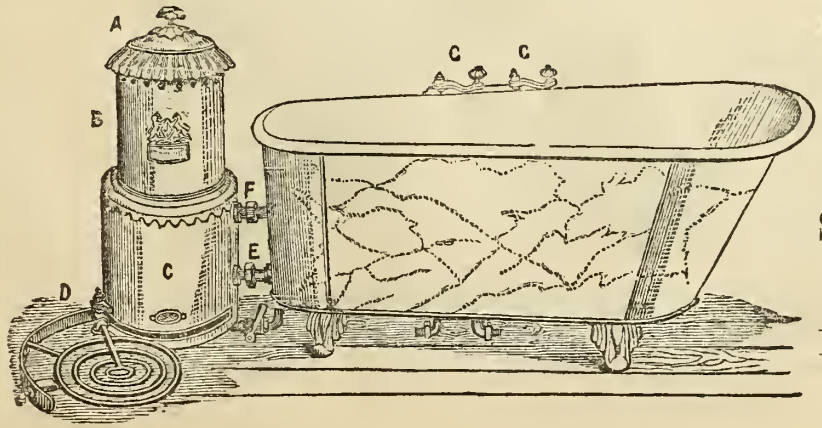
CAUTION.

Messrs. CLARK & COMPY of Rathbone Place, London,

SOLE PATENTEES AND INVENTORS of tho

SELF-COILING REVOLVING SHUTTERS,

Having ascertained that some Manufacturers are holding themselves out as Makers of their Self-Coiling Shutters, beg to CAUTION the Public against such Imitations, no person being able to make a Self-Coiling Shutter without infringing Messrs. CLARK & COMPY.'S PATENTS; and they hereby give notice that proceedings are now being taken against an Infringement, and that Messrs. CLARK & COMPY. will proceed against any person who shall infringe their Patents, by MAKING, PURCHASING, or USING such; and hereby further offer a REWARD to any person who shall give information of any such Infringement.



PHILLIPS AND SON,

25 and 26, BARBICAN,

LONDON, E.C.

Patentees and Manufacturers of every Description of

STOVES FOR HEATING

Baths, Halls, Churches, Conservatories,

AND

PUBLIC BUILDINGS BY GAS,

GAS COOKING APPARATUS, &c.

A PROSPECTUS SENT FREE BY POST.

Prize Medal, London, 1851.

Paris, 1867.

HONORABLE MENTION.

Prize Medal, London, 1862.

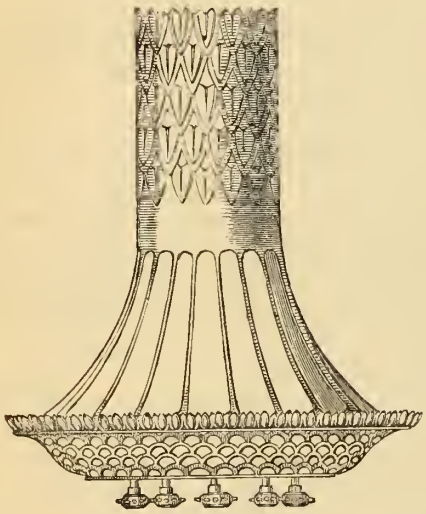
STRODE & CO.,

(Late of 16, St. Martin's-le-Grand)

GAS FITTERS, ENGINEERS, AND CONTRACTORS,

MANUFACTURERS OF

Every description of Gas Fittings, Lamps, Chandeliers, &c.



SHOW ROOMS,

67, St. Paul's Church Yard, E.C.

AND

32, Cockspur Street, S.W.

MANUFACTORY,

19, Osnaburgh St. Regent's Pk., N.W.

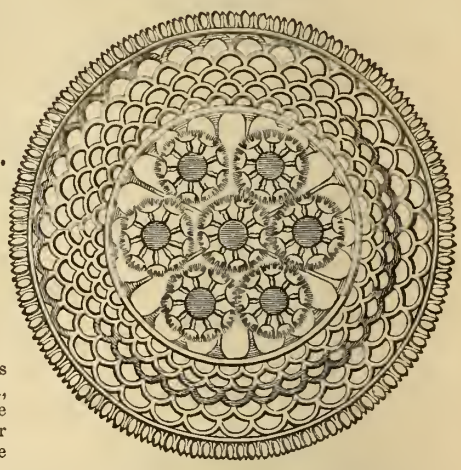
PATENTEES AND MANUFACTURERS OF THE IMPROVED VENTILATING

SUN BURNER

AND

SELF-ACTING VALVE.

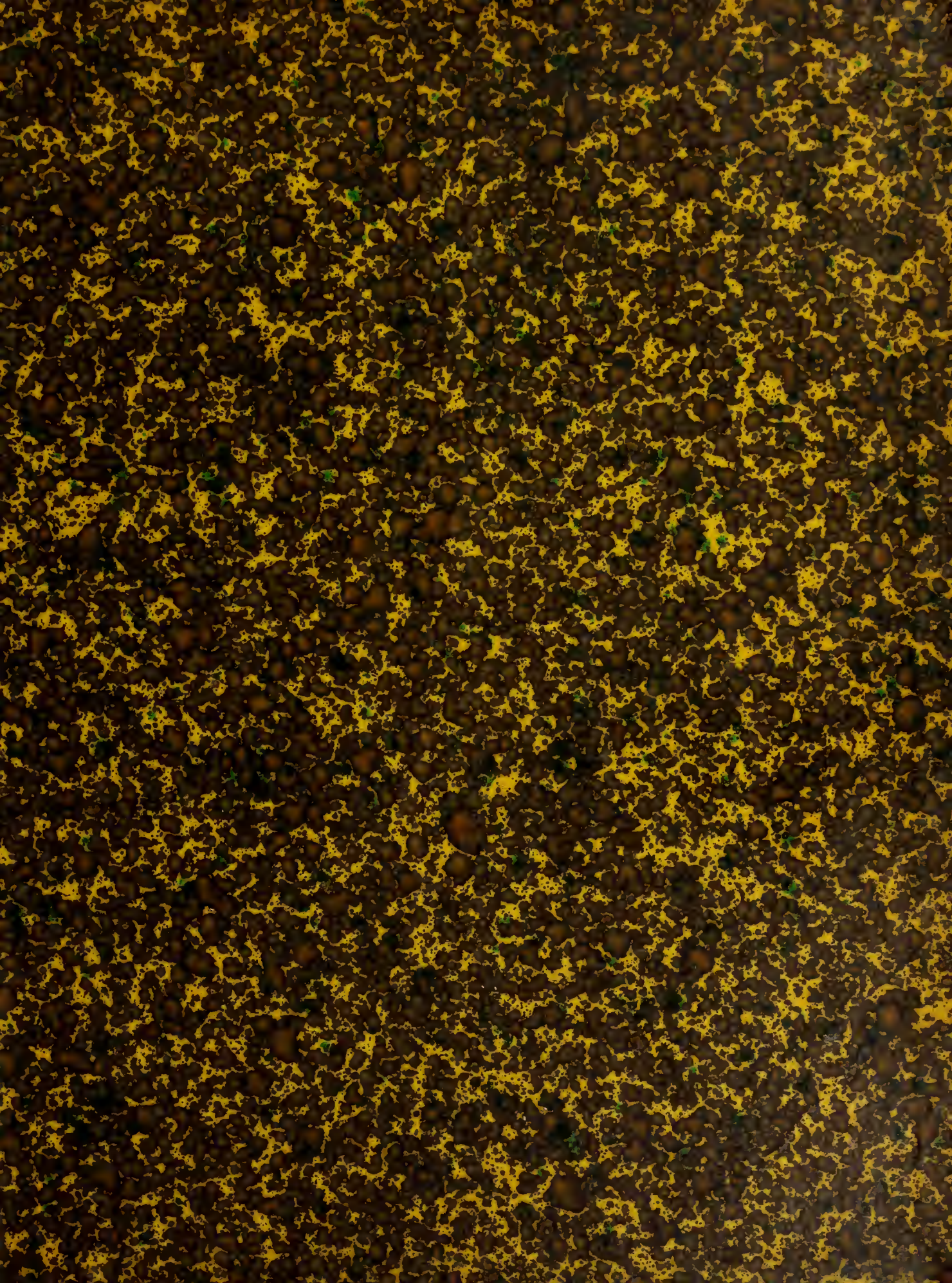
N.B.—In sending orders for Sun Burners it is necessary to give the size of the place to be lighted, with plan and section of roof and ceiling; or in case of rooms over, a plan showing construction of floor and ceiling, and position of any flue that could be made available.



Chandeliers, Brackets, and other Brass Work, Classical, Mediæval, or otherwise, made to Architects' Designs.

DRAWINGS AND ESTIMATES for GAS WORKS suitable for PRIVATE MANSIONS, RAILWAY STATIONS, &c. forwarded on application.

J. DAVY AND SONS PRINTERS, 137, LONG ACRE.



UNIVERSITY OF ILLINOIS-URBANA
3 0112 114036202